What does it mean to follow?
Movements in Harmolodic Space

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Abstract

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“You follow me”, says Ornette to Charlie Haden at one of their first meetings, sometime in the later 1950s, “and you go where I go”. But what does it mean to follow Ornette, what does it mean to go where Ornette goes? Oriented by tools developed from psychoanalysis – in particular the notion of transference, with its roots in the philosophy of the Scottish Enlightenment – as well as tools from a Lacanian Discourse Analysis and the neighbourhood topology of Felix Hausdorff, we attempt to lend a psychoanalytic ear to Ornette's discourse, finding in its many allusions to relations and their impasses – musical and otherwise – new ways to listen to Ornette's music as structure and space, as well as movements through that space. If we follow Ornette, attempting to go where Ornette goes, we also find in his thought consequences that offer the means to go further, to think *with* Ornette, beyond where his thought has already gone. In this way, we “take part”, as Freud says of the aims of the psychoanalytic experience, “in building up a new theory of the subject”.

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I. Introduction

1. I want you just to follow me

There is a story told by Charlie Haden that recounts his encounter, as a young, 21-year-old bassist from Shenandoah, Iowa, with a sound that would change the course of his life, making of him a new listener. At the inception of what was to become Haden's new vocation as listener and interpreter of this sound, so close, it seemed to him, to the human voice, the room lit up, and he would spend the following days searching for the man responsible for this most human of sounds emanating from the wide open mouth of a white, plastic saxophone:

> One Monday night I went over to a club called the Haig, and Gerry Mulligan and Chet Baker were playing there. And while they were playing a man came in the back door, an African American, with a horn alto case and asked if he could play. And, apparently, they said, yes, and he came up, took out a plastic horn, and started to play, and the whole room lit up for me. It was like the heavens opened up...[1]

For Haden, the experience of this sound would mark the beginning of a search, and he would ask his friend, the drummer Lennie McBrowne, about the source of this extraordinary sound he had heard, about the saxophone with the sound of a human voice. Convinced about the provenance of this sound, McBrowne would introduce Haden to Ornette, and together the two would travel in Ornette's little Studebaker, so the story goes, to Ornette's apartment, a space Haden found overflowing with transcripts of Ornette's beautiful melodies. Here they would play together some of Ornette's music for the first time:

> He picked up a piece of music and said, let's play this. I was so scared, but we played. He said, now, I wrote some changes out here when I wrote the melody, but when we start to improvise, I want you just to follow me, and you go where I go. And I said, man, finally I've been given permission to do what I want to do.[2]

“I want you just to follow me”, says Ornette to Charlie Haden at one of their first meetings, sometime in the later 1950s, “and you go where I go...” But what does it mean to *follow*, and what, in particular, does it mean to follow Ornette? If we take, as a starting point, the second part of Ornette's formulation – *you go where I go* – to be an answer to our question regarding the first, the question of what is means to follow, so that “to follow” *means* “to go where I go”, the question, “what does it mean to follow?”, becomes, simply, w*hat does it mean to go where Ornette goes?*, entailing not only the question, where is Ornette going?, but, also, what is a “where”? and what does it mean to “go”? These questions evoke a field of effects that will orient us with respect to the many Ornettian expressions we will draw into relation with our central question, the question of what it means to follow – effects of *where* – of *endpoints, direction* and of *space* – as well as effects of *going* – of *motion,* of *movement*.

1 Haden,“Charlie Haden on the Creation of Free Jazz”: 1.16 – 1.49.
2 “On the Creation of Free Jazz”: 3.16 – 3.34.

2. Background

Born in Fort Worth, Texas, perhaps on March 19, 1930,[3] Ornette received his first alto saxophone sometime around 1944 - 1945, at approximately 14 or 15 years of age and, lacking a teacher, taught himself to play.[4] According to stories he has himself told of his early development, Ornette misunderstood the construction of the alto, mistaking particular notes of the musical alphabet for others, and although he would be forced later to realise his mistake when humiliated by a school bandleader, such events would punctuate and even contribute to the development of his distinctive voice.[5]

On his work as a professional musician in venues across Fort Worth, then later as an itinerant musician, playing blues and dance music, as well as on sessions with more adventurous musicians, Ornette would suffer abuse and even violence as a result in part of the originality of his ideas, at first influenced by the work of musicians such as Charlie Parker and later as an attempt to go beyond its limitations.[6] At the time of recording his first album, *Something Else!!!!*, Ornette was not an established figure on the jazz scene, although known to many as a musician whose idiosyncratic approach signalled an inability to "pay his dues", to demonstrate his fluency in an approach to improvisation oriented with respect to harmonic coordinates. In Ornette's own words, "they said that I didn't know the changes and was out of tune",[7] a criticism echoed by Walter Norris, the pianist on Ornette's first album, *Something Else!!!!*, in a story told by the drummer, Ed Blackwell;

> I remember Walter Norris saying to me, 'Ornette doesn't seem to know his own tunes'. What he meant was that he got all the correct changes, but Ornette's horn didn't fit the changes.[8]

Norris' remark, which equates knowledge of a tune not with knowledge of the melody, which Ornette had himself composed, but of the "changes", makes sense against the background of a contemporary practice of composing new melodies for the temporal-harmonic frameworks – "changes" – of popular songs. Charlie Parker's "Moose the Mooche", for instance, appropriated the harmonic progression of *I Got Rhythm*, George Gershwin's song from the musical, *Girl Crazy*, whilst jettisoning the original melody. The improvisation would then, in virtuosic fashion, "make the changes" – improvise melodies, often at high speed, to fit these pre-established temporal-harmonic frameworks. Whilst musicians such as Parker extended what it meant to "make the changes", widening the palette of notes heard to fit the harmony, it was certainly possible *not* to make the changes, and, indeed, Ornette reports instances where he attended jam sessions only for a rhythm section to fall silent when he began to play.[9]

These are themes that would emerge again in many other contexts, in relation to other aspects of Ornette's music. There is story from 1959, the year Ornette would be received as a special guest by

3 There is some uncertainty about the exact date of Ornette's birth.
4 Litweiler, *Harmolodic Life,* 25.
5 Litweiler, *Harmolodic Life,* 25.
6 Litweiler, *Harmolodic Life,* 21-40.
7 Hentoff, Liner Notes to *Something Else!*
8 Litweiler, *Harmolodic Life,* 57.
9 "On the Creation of Free Jazz": 2.18-2.19.

the Lennox School of Jazz, a year in which, in some respects, Ornette's fortunes had at last begun to change. However, by no means were all of the faculty well-disposed to the sounds Ornette was making. In fact, the trombonist Bob Brookmeyer, furious at the positive reception being afforded Ornette, would resign his faculty position, his parting shot – "Damn it, tune up!" – focussing on a feature of Ornette's playing that also concerns, in its own way, this question of alignment we have been discussing.[10] Even a musician as sympathetic to Ornette as pianist Paul Bley would later joke that, having hired Ornette for his residency at the Five Spot in 1958 – a decision that would eventually cost Bley the residency itself – they would spend most of the day practising, with three quarters of that time trying to get Ornette to play at 440.[11] And, later, the critic Ekkehard Jost, who would subject Ornette's sound to a series of measurements ("with the aid of electro-acoustic processes"), would suggest that the problem of Ornette's tuning was a function of the limited opportunities that Ornette at that time had to play, and would be rectified in subsequent years when these opportunities became more frequent.[12] However, this is already to cede ground where something much more interesting is at stake. In an interview some years after the stories we are discussing, Ornette's own reflections on the early development of his sound would cast a new light on this apparent problem of tuning, revealing an ear unusually tuned to the splits and apparent paradoxes constituting an experience of musical identity:

> I realised that you could play sharp or flat in tune. That came very early in my saxophone interest. I used to play one note all day, and I used to try to find how many different sounds I could get out of the mouthpiece (I'm still looking for the magic mouthpiece)...I'd hear so many different tones and sounds..."[13]

So, the stories we have already alluded to here – of melodies that do not go the way of harmonic pathways, of sounds that depart from expected timbres and tunings – each in their own way touch on the questions at the heart of this thesis. For if Ornette's melodies, tunings, timbres – and we could add rhythms, timings, tonalities – are going somewhere other than we might expect them to go, *where* are they going? In the direction of which point, and through or to what nature of space, do they move?

3. Thesis Aims and Contribution

This thesis does not attempt to provide a comprehensive historical account of Ornette's life and work. Although it is a highly significant term in Ornette's universe, neither does it propose to offer a theoretical explanation or definition of "harmolodics", the expression that one might be might be tempted to take as a signifier of a unified and coherent Ornettian system. Such attempts exist, with virtues, but many limitations – we review these in the following chapter. Nor, however, does it attempt a broader hermeneutic approach to the study of Ornette's texts, sifting through a multitude of possible interpretations, from a multitude of interpretative positions.

This thesis attempts to develop a new approach to the analysis of Ornette's work that gives priority

10 Litweiler, *Harmolodic Life*, 70.
11 Litweiler, *Harmolodic Life,* 62.
12 Jost, *Free Jazz,* 53.
13 Litweiler, *Harmolodic Life*, 25.

to Ornette's speech. It takes Ornette's speech as a point of departure, using tools developed from psychoanalysis – in particular the notion of *transference* – to pay attention not only to what is said, but also to what is implied at the level of the gaps and inconsistencies, shifts and transferences, that constitute what is said about a singularly *Ornettian* constitution of such spaces and movement through them. Insofar as Ornette's discourse about his work also contains allusions to fields beyond the field of music, it seeks to develop tools that are able to draw elements and structures from these fields together, finding in their relation to one another echoes and parallels that evoke a field of problems that go beyond the field of music. What this thesis develops is thus a form of discourse analysis, informed by psychoanalysis, and in which the notion of transference is a central tool, in order to develop a new way of listening to Ornette's spoken discourse – that is a kind of *listening for listening*, an approach that aims to discern in and between the lines of Ornette's speech the implication of new ways to listen, new ways to experience Ornette's music as movement and space. In particular, it lends its ear to the implication of relations and relationality in Ornette's speech, and what they imply about Ornette's music as space. If this would seem to make of the author an authority, we instead put the accent on the author's *speech*, which, in its twists and distortions, then constitutes an authority beyond any authorial intention regarding that speech. We discuss these tools in detail in chapters III and IV.

Whilst the questions this thesis addresses touch on many concerns in music theory and analysis more broadly, our intention is thus not to produce a "general" theory, implying answers with an assumed relevance to a wide range of contexts. Rather, our aim is to produce a *singular* theory, or, rather, theory founded in the singularity of Ornette's discourse, and, in particular, in the answers to these questions his discourse implies. This is not to say that there will not be points of contact with musicological theories with ambitions of generality, but simply that these are not to be assumed in advance. This works in both directions; neither can it be assumed that more general theories will be of use with respect to Ornette's work, and nor can it be assumed that the singular theory we develop here can simply be generalised for use in other contexts.

The key questions this thesis seeks to answer are the following;

1. What does it mean to go, to *move*?
2. What is a *where*, both in terms of points and spaces?
3. What goings, movements, and spaces pertain to Ornette's music?
4. How to answer 1 – 3 without assuming that effects of movement and space are somehow an immanent property of the music?

4. Past work

The roots of our approach to the analysis of discourse and its relation to space are to be found in a project we undertook in 2009 on a piece by the writer and artist, Gregory Whitehead.[14] In a preamble to a performance released in 2001, Whitehead describes the genesis of the piece, which he calls "the squid piece", in an experience of "random overhearing", in which a "scrap of language", a fragment of something spoken – a *voice* – which he describes as "disconnected to discourse", floats

14 Undertaken in the context of a Masters programme.

out, taking control of his mind;

> It's about those little scraps of language, particularly in cities …that you hear in the market or in a random overhearing, and they just literally take over your consciousness for the course of the day. You cannot delete that particular scrap, and it just has your name on it, and it has decided it is going to control your mind […] I overheard this conversation where somebody said, "so you wanna talk about squid?" And the way it was said was so bizarre, so disconnected to discourse. It was just a voice that kind of floated out, and rather than have it rattle around as this kind of interminable loop for the rest of the day, I decided I had to just make a piece out of it. And it's based really on […] you know, in a way […] turning the squid into calamari, and then letting it be squid again, and then back to calamari.[15]

What was particularly striking for us about Whitehead's characterisation of this experience was the peculiar formulation he gives to its spatial character, it's being "disconnected to discourse". To what extent did such a formulation, we wondered, in which "to" appears where we might expect a "from" – disconnected *to*, rather than disconnected *from*, discourse – imply not so much the absence of a connection, but, rather, a disconnection that is "disavowed" – not recognised consciously, but present – *avowed* – nonetheless, at the level of this peculiarity of speech? This led us onto a number of further, related questions. For, if "disconnected to" implies less the absence of connection than a connection that is disavowed, what does this disavowal have to do with the particular effect of dominating control experienced with respect to this alien scrap, its ability to "take over your consciousness"? And, if these two factors – disavowal and domination – are intimately linked – if the effect of domination is contingent, that is, on the subjective disavowal of a connection – what does this imply about the subject's complicity in their own subjection, in the scrap's "decision" to "control your mind"?

There are many points of overlap between our approach now and then. As with our project on the "squid piece", our approach is oriented by an analysis of speech, though where, with Whitehead's work, our analysis was focussed on one text – the preamble to a performance of the piece, describing its genesis – in this project, we deal with numerous fragments from Ornette's discourse, each implying a particular approach to his work. As a consequence, there is a considerable increase in complexity, as we deal with not only the implications for our approach internal to a particular text, but also the implications that arise when these fragments are drawn into relation. More broadly, however, both these projects have in common an attention to the question of music as "cure". Whilst in the case of Whitehead's piece, this notion that music could have curative effects emerges in relation to the loosening of the hold the alien "scrap" has on his consciousness, in the current thesis, cure can be situated in relation to Ornette's notion of "sound medicine", and, in particular, to the question of a cure for solitude, which we discuss in chapter VII. In both instances, whilst psychoanalysis has offered coordinates for thinking through these different notions of cure, we have endeavoured to approach them on their own terms, without the assumption of any necessary relation between them or to the broader notions of cure in a psychoanalytic sense.[16]

15 Whitehead, 'Intro: The Squid Piece".

16 Of course, the question of what constitutes a "psychoanalytic cure" is itself an open question.

5. Transference

A key moment in the development of the specific tools used in this thesis was the discovery of an article by the psychoanalyst and mathematician, Bernard Burgoyne, entitled, "What Causes Structure to Find a Place in Love?", in which Burgoyne seeks to address the difficult question of the relation between psychoanalysis and science – a question which, as Burgoyne shows, concerned Freud himself – and, in particular, between psychoanalysis and mathematics. Burgoyne draws, in particular, on the work of the Hungarian psychoanalyst, Imre Hermann, who, in a series of texts published between the end of the Second World War and the mid-1960s, had proposed to find structural problems in the everyday problems of conflicts in love the analysis of which had already been undertaken in the field of mathematics. If the field of love and of mathematics are usually to be taken to be separate domains, Hermann finds between them a structural *parallel* – a thesis the strongest form of which could be articulated thus;

> All structures in the domain of sexual love have translations in the domain of mathematics equally, all mathematical structures correspond ("homologously") to some structural domain within the field of love.[17]

The existence of such parallels – or *homologies* – says Burgoyne elsewhere, means that one can "do love" by means of mathematics, and mathematics by means of love.[18] However, if the structures at work in the field of love find their parallel in those of mathematics, if the structures of each are homologous – they "say the same thing" – what structures are to be supposed on each side? What terrain is common to the structure of the unconscious and the structure of mathematics? Burgoyne finds an answer in the development of a notion, given an early articulation by the philosopher of the Scottish Enlightenment, Dugald Stewart, in his work on the processes underlying shifts of meaning.[19] This process, which is given the name *transference*, has a structure, which, says Burgoyne, is that of "giving to the connotation of a term some content that originally belonged elsewhere. Its subject is that of shifts of meaning".[20] Burgoyne shows how Stewart's theory of transference, via John Stuart Mill's work in the *System of Logic* on language suitable for the "investigation...of general truths",[21] is taken up by Freud in a text on the elementary structures of the human mind,[22] as well as by the Irish mathematician, William Rowan Hamilton, who sought to make the theory of transference a foundation for all mathematics. It was then later taken up by the mathematician, Abraham Robinson, whose transference theorems are those asserting that "any statement of a specified type which is true for one particular structure or class, is true also for some other structure or class of structures."[23] The lineage of thought Burgoyne describes performs a structuring function in relation to our own tools and approach; we rely on the real relations that exist between the different strands in the development of the notion of transference in order to establish relations between different fields. The reader is encouraged to trace these connections in

17 Burgoyne, "What Causes Structure?", 237.
18 Burgoyne, *Secrets of Space.*
19 Stewart, *Philosophical Essays.*
20"What Causes Structure?"
21 Mill, *System of Logic*, book IV, ch. IV.
22 Freud, *On Aphasia*.
23 "What Causes Structure?", 250.

the list of tools offered below, as well as in the thesis as a whole.

Transference and Ornette

For someone familiar with Ornette's work, it is possible to discern a profound relation between the ideas uncovered in Burgoyne's article and those to be found in Ornette's speech and music, a kind of fundamental consonance at the level of the problems they address, which makes their relation appear with the force of something like necessity. This, I propose, is for two main reasons;

- First, what Ornette has sometimes called "harmolodics" – the theoretical articulation he has given to his own music – is, in some respects, *itself a theory of meaning shifts* – whether they are the shifts implied by transposition, a key aspect in Ornette's music, "reinterpretation" in its more tonal sense, or by homophonic "mishearings" made possible by consonances relating the sounds of one language contingently to another;

- Second, the movement of Ornette's work from the earliest recorded pieces in 1958 to the 1972 recording of *Skies of America* – the historical range covered by this project – *is a movement towards parallelism*; if in the early 1960s, as Charlie Haden notes, "the harmony in the horns was real harmony", later, and certainly by the time of the searing textures of *Skies of America*, in which the London Symphony Orchestra articulates *tutti* transposed versions of the same melody – what Ornette will call melodic *unisons* – "the harmony was all parallel".[24]

Whilst such "parallelisms" are most evident in the transpositional logic of *Skies of America* and elsewhere, it is also possible to discern relations of parallel in the connections Ornette has made between the space of his music and those spaces implied by the impasses of love, of language, of race; if one can "do love" by means of mathematics, as Burgoyne proposes, one can also, Ornette seems to suggest, "do love" by means of music, and vice versa. These relations are in the foreground in the later chapters of this thesis on "Lonely Woman" and *Skies of America.*

6. Background questions

In the background to this thesis are a number of questions and concerns that together form, often invisible, coordinates orienting it as a space. Whilst some may never appear as such, and whilst they may not form part of the work's manifest thesis, these coordinates nonetheless constitute a wider space in which this current work resonates and in the direction of which further work may move.

They are:

1. The attempt to discover, and think through the consequences of, points of connection between music and psychoanalysis;

2. The attempt to listen *analytically*, in the mode, that is, of a psychoanalyst, not in order to analyse

24 Haden, interview by Ethan Iverson.

Ornette, or to offer some form of diagnosis, but, instead, to give an analyst's attention to the particular expressions and their relation that constitute his singular discourse;

3. The attempt to discern in the space of music, aside from its relation to the field of the visual, effects of veiling correlative to the dimension of what Michel Chion has called the "acousmatic voice".[25] Veiling effects are particularly in the foreground in chapter VI, dealing with "Invisible";

4. The attempt, on which this previous attempt is contingent, to think of music as *space*, aside from visual space, or the physical space in which waves form and reverberate, and aside from the metaphorical relation to any such spaces – music, in other words, as itself a space, and thus, perhaps, as subject *internally* to the splits and disconnections that pertain to the aural-visual space of the acousmatic voice;

5. The attempt to think music "conceptually", in the sense this term has been given in relation to contemporary art, where the "conceptualisation" of the art object is the effect of a shift from a space of points to a space of relations.[26] This shift is, again, in the foreground in chapter VI on "Invisible", though the shift from points to relations and back again animates the thesis as a whole.

7. Layout of the thesis

The thesis is laid out in the following way. The subsequent chapter, II, reviews the literature dealing with Ornette's work specifically, as well as the literature dealing with themes related to the thesis approach. An account of the thesis tools and their application follows in chapters III and IV. Each chapter from chapter V to IX is then oriented with respect to a fragment or fragments of Ornette's discourse dealing with a piece, or collection of pieces, from Ornette's work. These are first dealt with on their own terms, with each chapter then drawing through the consequences of prior chapters in relation to new material. This approach, which orients each chapter with respect to a fragment of Ornette's discourse, has some consequences in terms of both the choice of tools and how these are elaborated throughout the text, yielding a text that is at times a little unorthodox. At a first level, there are what could be considered "background" tools; tools from a Lacanian discourse analysis, the notion of transference, mathematical relations and topology. These tools apply throughout the thesis, and are introduced in some detail in the tools chapter, III. However, there are also tools that emerge as a consequence of a close attention to Ornette's speech – what might be called "foreground" tools – and these are developed in the course of the analytical chapters; the notions of analysis and synthesis and "free vectors", are instances of these. This slightly unorthodox feature is thus a direct result of our thesis approach. It is worth noting, however, that all of the tools that appear in the analytical chapters are closely related to the more general tools.

The "analytic" half of the thesis proceeds as follows. Chapter V introduces William Rowan Hamilton's deployment of the notions of *analysis* and *synthesis* with respect to notion of a *vector.* It uses these tools to both develop the notion of *tonic relations*, implied by the fragment that orients this chapter – proposed by Ornette as an answer to the question of knowing where to go – as well

25 Chion, *The Voice in Cinema.*
26 Osborne, "Contemporary Art is Post-Conceptual Art".

as, with Hamiltonian analysis and synthesis, to generate effects of movement through tonic-oriented spaces.

Chapter VI is oriented with respect to a fragment alluding to effects of veiling and invisibility, and to the piece “Invisible”, which we relate, again, to Hamiltonian analysis and synthesis – as well as to the implications of transposition. We develop the notion of a *free relation*, as implied by this fragment, linking the “freedom” of *free relations* to the notion of a *free vector*, a vector the identity of which is to be situated at the level of the relations its constitution implies, rather than at the level of any points this relation relates.

Chapter VII and VIII are oriented with respect to fragments related to “Lonely Woman”, the famous piece from Ornette's 1959 album, *The Shape of Jazz to Come.* In chapter VII, we elaborate the notion of *solitude relations*, linking this to Ornette's idiosyncratic definition of an “Interval”, as well as to the related notion of an “Idea”, rethinking both in terms of Hamiltonian arithmetic. We then consider the possibilities of a *cure for solitude.* In chapter VIII, we deal with the dimension of time in “Lonely Woman”, implying a more radical solitude than is implied in chapter VII, in the context of a discussion of tension in love conflicts and *no relation.*

Chapter IX is a broader chapter, oriented with respect to a number of fragments related to, as well as directly addressing, *Skies of America*, Ornette's orchestral piece, first performed in 1972. Here we introduce the idiosyncratic Ornettian notion of “Unison”, which Ornette defines in terms of the *voice*, relating it both to this orchestral piece, as well as to the previous chapters. From this we elaborate the notion of a *unison relation*. Many of the strands developed in the thesis are drawn together in this final analytic chapter.

Our conclusions follow in chapter X. This chapter will also include possible directions for future work.

II. Literature Review

1. Introduction

This literature review will do two things. First, it will review the literature on Ornette's music specifically, giving an account of the main authors, themes and arguments, what is missing from this work, and how this thesis will address these gaps. Second, it will review the musical-theoretical literature relevant to the thesis tools and approach, outlining, and offering a critique of, key precedents. It will then offer a short conclusion, summarising problems with this work, how our approach addresses these problems, as well as why, given the strengths and weaknesses of the work reviewed, the tools and approach developed in this thesis are to be preferred.

We review the work on Ornette under five main headings;

- music journalism;
- biographical/historical approaches;
- attempts to explain and/or define “harmolodics”;
- theoretical approaches to elements in Ornette's music and its structural organisation;
- approaches to audience reception.

We then deal with the literature related to the thesis approach under three main headings:

- *movement* – dealing with approaches to the sense that music is “going somewhere” in the broader sense, including approaches to expectation and anticipation, musical schema and gesture;
- *discourse* – dealing with metaphor theory, semiotic approaches, the “New Musicology” and psychoanalytic approaches to the question of music and discourse; and
- *space* – dealing with mathematical approaches to musical space, including set theoretic, Neo-Riemannian and transformational approaches.

A short conclusion follows.

2. Literature on Ornette

Journalistic accounts

Much of the early, journalistic material on Ornette is to be found in the feature or review sections of jazz periodicals, such as *Downbeat* or *Jazz Journal*, in liner notes to Ornette's albums, sometimes written by prominent contemporary jazz critics, such as Martin Williams and Nat Hentoff, or in interviews on other media. Whilst much of this material lacks a developed theoretical orientation, it is nonetheless invaluable as historical record. In some instances, where the interviewer has been as perspicacious a musician and listener as Gunther Schuller, for instance, the results have been no less than essential for an understanding of Ornette's work. In this respect, the key texts for this thesis

have been Schuller's 1960 interview with Ornette for his radio show on WNBC,[27] the liner notes to Ornette's albums – particularly the notes to Ornette's first album, "Something Else", and to the first recording of his 1972 orchestral work, *Skies of America* – many of which contain interview material with Ornette, and Derrida's interview with Ornette in 1997 for the French rock music journal, *Les Inrockuptibles.*[28] Numerous other interviews, however, have provided supporting material for these key texts. These will be referred to in the main body of the thesis.

Biographical/historical approaches

A number of book or chapter-length texts with a more scholarly, historical orientation have appeared since the 1960s. Litweiler,[29] for instance, charts Ornette's development from his earliest experiments with sound until his work with Pat Metheny, Prime Time and others in the 1990s. Like work by Mandel[30] and Spellman,[31] much space is devoted to interviews with Ornette, repeating verbatim many passages outstanding for their capacity to illuminate Ornette's music and ideas. Spellman's book, first published in 1966 as "a biopsy of black art life in mid-century America",[32] finds Ornette deep in the difficulties experienced in the 60s by Black artists whose music was situated at a distance from commercial priorities, whilst Mandel's text attempts to link Ornette's work to the accomplishments of the American avant-garde. Texts by Wilmer[33] and, more recently, Golia,[34] are further, significant additions to this list, with Wilmer offering a historical introduction to the "New Music" of the 1960s, including a short chapter devoted to Ornette, and Golia attempting to situate Ornette's innovations in their wider social and historical context.[35] While some form of theoretical or analytical engagement is a feature of almost all the texts on Ornette, with Mandel here particularly interested in discussing with Ornette the nature and import of "harmolodics", the significance of these texts is to be situated primarily at the level of their status as histories or historical contextualisations, with Spellman's and Mandel's texts presenting a good deal of history that is oral. This work strikes us as both absolutely necessary and insufficient; an accurate and detailed account of Ornette's life and work, as well as an attention to oral-historical testimony, has been indispensable for this thesis, for instance, but we contend that tools other than, or in addition to, historical tools are needed in order to make sense of Ornette's music and thought.

Defining "harmolodics"

Two book-length monographs by Wilson[36] and Rush[37] both significantly shift the emphasis to the specifically theoretical account Ornette has given of his music, as named by Ornette's neologism,

27 Coleman, interview by Schuller.
28 Coleman, "The Other's Language".
29 Litweiler, *A Harmolodic Life.*
30 Mandel, *Miles, Ornette, Cecil*.
31 Spellman, *Four Lives*, 77-150.
32 *Four Lives*, xiv
33 Wilmer, *As Serious As Your Life*, 60-74.
34 Golia, *The Territory and the Adventure.*
35 For other texts with a broad, introductory and/or historical orientation, see McRae, *Ornette Coleman*; Rockwell, *All American Music*, 185-197.
36 Wilson, *Ornette Coleman: His Life and Music.*
37 Rush, *Free Jazz, Harmolodics and Ornette Coleman*.

“harmolodics”. In fact, Rush's book, currently the penultimate in the sequence of book-length texts on Ornette, is written with the explicit and central goal of providing a definitive explanation of this term, based on the extensive time he spent with his subject. Both authors set out with the sense that “harmolodics” cannot simply be reduced, in Wilson's words, to “a repository of concepts and procedures”, but rather constitutes “a kind of musical-philosophical program”, which Wilson links to a “goal to inspire individual creativity”,[38] and Rush to the question of equality, insofar as it is possible to discern parallels, he says, between the equality that pertains to relations in Ornette's groups and the struggle for the recognition of equality by the movement for civil rights in the country of Ornette's birth.[39] Nonetheless, both Wilson and Rush are prepared to offer a determinate list of techniques or strategies that they think can be characterised as “harmolodic”, including the use of range to organise the structure of the improvisation, references to keys heard in the composition, the manipulation of phrase lengths, a balance between inside and outside, amongst others, in the case of Rush,[40] and metrical liberation, polymodality, tempo changes, transposition by a third, parallel movement, an orchestral ideal, amongst others, in the case of Wilson.[41] Whilst these are far from constituting uninteresting lists, there is the question of the extent to which many, if not all, of these constitute particular *interpretations* of Ornette's music, rather than simply descriptions of things self-evident in the music itself. However, such lists also point to a broader problem with a project attempting to explain or define the notion of “harmolodics”. For, if, as Ornette has stated, *everything* he has done has been “harmolodic”, the danger is that the search for a defining property common to *everything* Ornette has done will either entail such a radical narrowing of focus that the singularity of particular texts will be effaced, or, in an effort to include this diversity, one's “definition” begins to resemble an ever-expanding list of features, without any real sense of what links them together. Both these texts by Rush and Wilson veer toward the latter danger, albeit, in the case of Rush, with the political articulation attempting to provide a somewhat limiting, over-arching structural principle.[42]

Theoretical approaches

An early, significant attempt to develop a more considered, theoretical approach to structural relations in Ornette's music is the short chapter devoted to Ornette in Jost's *Free Jazz*, published in 1975.[43] Although less analytically formal precursors to Jost's ideas had appeared in liner notes and elsewhere at the time the music was being made,[44] Jost's book constitutes an important landmark, offering structural dignity to work that was at times considered without sense or form, as well as an orientation to some of the analytical studies that followed. For Jost, whilst Ornette's music entailed the “negation” of the use of a predetermined harmonic framework as a basis for improvisation – Coleman's music in the late fifties is “entirely tonal” insofar as it maintains a relation to a single tone (the “tonal centre”), without this also implying functional, harmonic progressions. However, if such a relation to a single tone creates a tendency for monotony, says Jost, this is countered by two,

38 Wilson, *Ornette Coleman*, 74.
39 Rush, *Free Jazz*, 25.
40 Rush, *Free Jazz*, 8-9.
41 Wilson, *Ornette Coleman*, 74-83.
42 For a more detailed appraisal of the text by Rush, see my review in *Popular Music* 37.
43 Jost, *Free Jazz*, 44-65.
44 See Martin, “The Plastic Muse, Part 1”.

closely-related stylistic elements – first, a new kind of motivic improvisation, which he terms "motivic chain association", and, second, shifts to secondary tonal centres.[45] Ornette, says Jost, invents motifs as he goes along, independently of the theme, with the constitution of an inner coherence comparable to the coherence of Joycean stream of consciousness or Surrealist automatic writing.[46] Shifts to new tonal centres then arise as a consequence of such chains of associations, rather than as a consequence of the functional, harmonic changes negated by Ornette's approach, insofar as the motifs generated in this way imply new tonal relations.[47] And if a relation to a central theme is maintained, adds Jost, if there is a unity of theme and improvisation in Ornette's music, it is "more emotional than formal".[48]

Jost's "motivic chain associations" and "shifts to secondary tonal centres" have been important for a number of subsequent studies, with Cogswell attempting a further categorisation of Jostian associations according to whether they are based on pitch, contour, rhythm, and so on, or characterised by repetition, variation and step progression (a kind of *Urlinie* in miniature),[49] and Block rejecting the sufficiency of a Jostian analysis altogether in favour of a pitch-class set analysis based on Morris and Forte.[50] Sasaki, meanwhile, has drawn on the tonal aspect of Jost's thesis, developing a notion of "tonal diplomacy" from a distinction made by Charlie Haden between modulation taken from "the direction inside the musician" and "listening to each other", in an attempt to answer the question of how such modulations in Ornette's music are effected.[51] However, perhaps the most elaborate deployment of Jostian ideas has come from Mazzola's development of the notion of collaboration with respect to the broader term, "free jazz",[52] and in the context of his prior work on mathematical topos theory.[53] In Mazzola's account, Ornette's music on the 1960 album, *Free Jazz*, is to be characterised in terms of the free interaction of melodic units, conceived as an exchange of "gestures", in which melodic messages are thrown around to constitute an "associative chain" of "gestural motifs"– an idea Mazzola links explicitly to Jost's "motivic chain association". However, whilst Jost maintained an emphasis on tonality, albeit in the form of the shift to secondary tonal centres, Mazzola considers such harmonic and tonal spaces, together with conventional textural roles, to be "eliminated" in Ornette's music, and, if potentially enriching to analysis, a matter of structural insignificance.

As interesting as these developments of Jost's theories are, there are a number of significant issues when it comes to their usefulness for an analysis of Ornette's music. With respect to Mazzola in particular, there is the question of tonality in Ornette's project, and whether tonal relations are as insignificant to the space it constitutes as Mazzola would have us think. In fact, precisely the question of tonality emerges in the quotation with respect to which the fifth chapter of this thesis is oriented, in which Ornette links tonality to a question very close to the one this thesis seeks to answer. Second, as distinct from Jost, there is little attention in Mazzola's text to *composition* (in

45 Jost, *Free Jazz*, 48.
46 Jost, *Free Jazz*, 49.
47 Jost, *Free Jazz*, 51.
48 Jost, *Free Jazz*, 56.
49 Cogswell, *Melodic organisation.*
50 Block, *Organised Sound.*
51 Sasaki, *Two Types of Modulation*.
52 Mazzola, *Flow, Gestures and Spaces in Free Jazz.*
53 Mazzola, *The Topos of Music.*

fact, there is scant attention given to the analysis of any musical material at all, other than the analysis of the music of Mazzola's own free jazz ensemble), a problem that is likely a symptom of Mazzola's aim to generate a *general* theory of "free jazz", interpreted as an improvisatory, collaborative music. In this respect, it is significant that Mazzola has chosen to focus his analysis on *Free Jazz*, Ornette's album from 1960, in which Ornettian composition is perhaps least in the foreground. The third, and perhaps most significant, critique of Mazzola's rereading of Jost, however, is related to his minimising of the broadly "semiotic" dimension in Ornette's music. In the priority he seeks to give to the level of gesture*,* Mazzola thereby minimises a dimension central to the way Ornette himself has spoken about his own music, evident in the allusion to "sound grammar" later in his career, as well as in the relation he has drawn between the notion of "harmolodics" and the dimension of language and meaning.

Whilst it would perhaps take a brave analyst to discern in one or other of Ornette's solos a Schenkerian Urlinie, for instance, one is tempted to read in these more theoretical approaches – from Jost to Mazzola – a kind of template for an infinite series of Ornette-related analyses, each ending with the conclusion that, "whilst Ornette freed the improviser from the tyranny of harmonic-structural frameworks, Ornette's solos are far from chaotic – on the contrary, they are organised precisely by..." – with the organising principle supplied by the author's own particular analytical identifications. Whilst it may appear easy to mock such attempts, we are nonetheless presented with the following question; if the way that music appears to us is, at least in part, an effect of one's analytical identifications, how *does* one approach Ornette's music? How does one develop analytical tools that are not simply the imposition of existing theoretical presuppositions on a music that knows nothing of them? In this respect, it is worth noting that something akin to the theory Jost proposes was already developed and *presented to Ornette* in an interview with Schuller in 1960.[54] Whilst Ornette is ever *agreeable* in this interview, his response is far from constituting simple *agreement.* We investigate this in chapter VIII.

In a sense, these questions of analysis and interpretation animate the analysis by Vickery and James of the temporal surface of "Lonely Woman", attempting to determine the extent to which certain temporal structures are planned, and thus, perhaps, to be situated as "really there" at the level of the experience of the musicians performing them. Specifically, and in an effort to give some precision to the analysis of this piece, the representation of which has often aimed at an unsatisfactory "approximation of reality",[55] Vickery and James draw on Albert Bregman's Auditory Score Analysis (ASA),[56] as well as digital analysis tools, to determine the precise relationship between the rhythm section and melody instruments in Ornette's 1959 recording of Ornette's piece.[57] Using these methods, Vickery and James determine a number of precise, if shifting, mathematical relationships between the melody and rhythm section – 14:5, 11:4, 41:15, 11:4, and so on – concluding that, due to the complexity of such relations, it would be difficult to assert that they are the result of intention or planning. Rather, they suggest, the phrase synchrony explored in the performance of "Lonely Woman" is attributable to the high degree of musicality in the ensemble, with a drummer that

54 Coleman, interview by Schuller.
55 Westendorf, *Analysing Free Jazz*, 82.
56 Bregman, *Auditory Scene Analysis.*
57 Vickery and James, *The Enduring Temporal Mystery.*

“masterfully pushes and pulls the time in order to manipulate the tempo to land more closely in symmetry with the phrasing of the horns”.[58]

Whilst it strikes us that Vickery and James are asking precisely the right questions, and whilst such painstaking work establishing the complexity of temporal relations it might be possible to discern in Ornette's music is of value for establishing some coordinates in this field, it is not clear that they reduce the domain of interpretation – the sense in which the experience of temporal structure, or of the relation between structures, is an effect of interpretive processes irreducible to a technical analysis of the surface level of music – to nothing. We are thus again left with the question of how to orient ourselves with respect this field of interpretations in a way that is faithful to the singularity of Ornette's work. In chapter VIII, we offer our own analysis of the temporal aspect of “Lonely Woman”, but instead we focus on the notion of time implied by Ornette's spoken discourse.

With respect to such questions of interpretation, a shift to a more reception-oriented approach may be of interest.[59] Saslaw has attempted to examine the, at times, extremely unfavourable, reception to Ornette's music in the late 1950s and early 1960s in terms of Raymond Gibbs' work on *intentionality*, and work by Lakoff, Johnson and others on *image schema.*[60] (We give a more comprehensive overview of image schema in the following section). If understanding is dependent on the, perhaps unconscious, attribution of authorial intention, such that the meaning of an act may be experienced by one as a hostile attack and another as creative invention, “image schema” – the author is particularly interested in the “container-schematic” which attributes to a phenomena characteristics of inside, outside and boundary – are “cross-modal cognitive structures that shape percepts and concepts”.[61] Thinking these two things together, Saslaw links the early reception of Ornette's work to container-schematics that conceived of Ornette's music as “out” and Ornette as an “outsider”, which may then have entailed the attribution of hostile intentions – the experience of Ornette's music as “conscious, intentional personal attack” – or to an inability to find “common ground” that would form the basis of any intentionality at all; audiences had no common ground to help them determine whether his pitch manipulations, for instance, were made intentionally or not. Whilst such analyses of audience relations to Ornette's music are interesting, however, an understanding of the nature and emergence of audience responses does not necessarily bring us closer to understanding Ornette's music, particularly, as we argue below, as Ornette's music is to be understood as the expression of something that complicates the question of the existence or attribution of authorial intention. We, however, offer a broader critique of schema theory in the following section.

The existing literature and ours

If a historical approach is a necessary but insufficient contribution to the understanding of Ornette's work, there are, as we have seen, also a number of key questions with respect to the existing theoretical attempts. What interests us here is not an “objective” account of Ornette's music, written

58 Vickery and James, *Enduring*, 63.
59 For a reading of the early reception of Ornette's music in terms of Bordieau, see: Lee, *The Battle of the Five Spot.*
60 Saslaw, *Far Out.*
61 Saslaw, *Far Out*, 98.

from some, perhaps, impossible point beyond the domain of interpretation, but, rather, an account that takes Ornette's work to be the expression of a subjective *singularity*, something irreducibly *Ornettian*, manifest not only in his music, but also in his discourse about it, including its gaps and inconsistencies, tensions and apparent contradictions. If Ornette's own words are to be a starting point for the development of our analytical tools, what we find there, however, are not only hints and implications about the nature of Ornettian spaces, but references and allusions to fields other than music, to which music nonetheless seems to be, for Ornette, in some kind of intimate relation. The question is thus not only of how to analyse Ornette's music, but also, crucially, of how to introduce these other fields into a proper relation with it, of how to uncover, that is, the relation that, for Ornette, relates them.

What we need, then, and what is lacking from the existing literature, is an approach that;

- first, in the development of analytical tools, gives priority to Ornette's own words about his music, without thereby seeking to make Ornette a point of unimpeachable authority; the point is not how Ornette explains his work, but both what Ornette's own discourse – including its gaps and inconsistencies – implies about how his work might be experienced, as well as how such implications can be made the basis of an analytical approach;

- second, is able to draw together the heterogeneous strands of Ornette's discourse, thus doing service to the extent to which apparently unrelated fields – of music and of love, of race, of language – are *for Ornette* both intimately related and essential for understanding his work.

This thesis addresses these gaps by developing an approach that;

- oriented by psychoanalysis, with the attention it gives to gaps and inconsistencies, as well as the notion of *transference*, is able both to give priority of Ornette's speech in the development of its analytic tools;

- with the aid of some tools from mathematics, in particular the notion of a relation, as well as some tools from neighbourhood topology, to give an articulation to the movement through spaces Ornette's speech implies.

These tools are presented in more detail in chapters III and IV, which immediately follow this one.

3. Theories related to the thesis approach

In the second half of this literature review, we present a survey and critique of theories related to our own approach, in preparation for the elaboration of our own tools in the following chapter. We group this review under three main headings: *movement*, conceived broadly in terms of the experience that music is "going somewhere" – this relates directly to how we have chosen to interpret the question of what it means to follow – to "go – to *move* – where I go" – *discourse*, addressing the relation between music and discourse, and *space*, dealing with mathematical approaches to musical space. In the section on *movement*, we survey and critique theories of

musical "expectation", from Meyer to Huron, as well as theories of "image-schema" and "gesture", which deal with the question of musical motion in a more explicit way. In the section on discourse, we consider approaches to music and discourse, surveying work by Nattiez, the "New Musicology" and beyond. And in the final section on space, we deal with more mathematical articulations of musical spatiality, as given in set theory, transformational and Neo-Riemannian theory and geometry. Although these three areas of movement, discourse and space address distinct themes as explored in the thesis, it is clear that the distinction is somewhat artificial, for the theories of Meyer, reviewed in the section on movement, are as much theories of musical signification, whilst the work of Lewin, reviewed in the section on space, is clearly as much a theory of musical motion. If this implies an enabling degree of interconnectivity underlying apparently divergent fields, it is nonetheless the case that these fields have developed with a degree of independence, without necessarily relying on one other for their emergence, and it likely aids the clarity of this section if we treat them as such.

3.1 Movement

Expectation/Anticipation

We start the section on musical movement with a survey of approaches to musical "expectation" or "anticipation". Such theories seek to deal with the experience that, given a point, *x*, some point, *y*, is expected to follow. For Meyer,[62] expectation and meaning are, in a sense, intimately linked, insofar as they both imply *reference* – that points "refer" to other points – a defining feature of meaning, he says, borrowing from a definition given by Cohen.[63] Meyer's theory is articulated in the context of a notion of "tendencies" – a term he uses to refer to all response patterns, whether natural or learned – that form a "chain reaction" in which an antecedent stimulus leads to a more or less specific consequent. Such tendencies are *expectations*, insofar as a consequent is always implied once a tendency has been brought into play.[64] As music is able to evoke such tendencies, says Meyer, it involves the phenomenon of expectation – the expectation that a tonic follow a sequence of harmonies, for instance, or that after a melodic fragment has been repeated several times it will be followed by a change.[65]

Narmour's "implication-realization model"[66] built on Meyer's theory, attempting to determine the specific note-to-note principles by which listeners perceive and comprehend melodic structures. Narmour claimed that the perception of melody rests on the realization or denial of two formal and universal hypotheses – $A + A \rightarrow A$ (that the repetition of some melodic aspect ($A + A$) implies ($\rightarrow$) the further repetition of that aspect (A)), and that $A + B \rightarrow C$ (that difference at the level of some melodic aspect ($A + B$ where $A \neq B$) implies ($\rightarrow$) some form of further difference (C)). Such forms exhibit the function of closure or non-closure, said Narmour, with repetition and difference on the sides of non-closure and closure respectively. In addition, Narmour posited the existence of a "brute" "automatic" system, which he called a "syntactic, parametric scale", that functions to

62 Meyer, *Meaning and Emotion in Music* and *Explaining Music.*
63 Cohen, *A Preface to Logic*, 47.
64 Meyer, *Meaning*, 25.
65 Meyer, *Meaning*, 25-26.
66 Narmour, *The Analysis and Cognition of Basic Melodic Structures.*

determine similarity and difference, closure and non-closure, as well as to suppose implications of similarity at the level of registral direction and intervallic differentiation when intervals are small, and difference when they are larger.

More recently, and explicitly conceived as an attempt to fill in the theoretical gaps in Meyer's theory, Huron has developed an approach to the question of music expectation from the perspective of evolutionary theory.[67] The capacity to develop accurate expectations about the future affords, he says, biological advantages, with natural selection favouring cognitive systems that help an organism to anticipate such events correctly.[68] Emotional responses – the experience, for instance, of surprise and anticipation – function in this context as "motivational amplifiers" rewarding accurate predictions, on the one hand, and "punishing" maladaptive inaccuracies, on the other.[69] In the context of this evolutionary approach, and using the Hink-Hyman law of learning, which posits a direct, inverse relation between the frequency of occurrence of an event and the speed of cognitive processing, Huron then proposes a statistical model of musical anticipation – not only that auditory learning may be statistical in nature, but that statistical learning might form the basis for auditory expectation.

At the heart of each of these theories is thus a question regarding the specific laws that govern expectation. For Meyer, expectation is the product of the habit responses developed with respect to a particular musical style, on the one hand, and the psychological laws of mental life as described by Gestalt psychology, on the other. Once the norms of a style have been ascertained, as well as the laws governing the mental organisation of music stimuli, tendencies and their affective inhibition can thus be studied "objectively", as a property of the piece itself, insofar as the piece conforms to, or deviates from, such laws and norms.[70] In the case of Narmour, there is the assertion of a few universal principles governing expectation, and, in the case of Huron, there is the mere positing of a statistical cause – expectation is a function of probabilities determined by the frequency of prior occurrence.[71] These propositions prompt us to ask a number of simple, but fundamental, questions. On the one hand, are expectations really governed by stylistic "norms" in the way Meyer proposes? Do, in fact, styles exist as stable, law-governed entities in the way Meyer would like us to think? On the other, are the mental activities that select and organise stimuli into figures and groupings really governed by the laws proposed by the Gestalt school of psychology, as given expression in the theories of both Meyer and Narmour? Meanwhile, can musical expectation really be reduced to a statistical count, such that expectations are based on a kind of internal tally of past incidence, as in the case of Huron? If the answer to any, or all, of these questions is no, or even uncertain, what are the consequences at the level of the resulting experience of expectation such laws are meant to cause?

Since the publication of Meyer's *Emotion and Meaning in Music*, some experimental work has attempted to provide evidence for the theories of both Meyer and Narmour.[72] However, the

67 Huron, *Sweet Anticipation*.
68 Huron, *Sweet Anticipation*, 3.
69 Huron, *Sweet Anticipation*, 4.
70 Meyer, *Meaning*, 32.
71 Huron, *Sweet Anticipation*., 71.
72 See, for instance, Carlsen, Divenyi and Taylor, "Perceptual Expectancy in Melodic Configurations."; Dowling, Lung,

questions we raised have also motivated some of the existing critiques of their work. Narmour's ideas on implication and realization were given an early articulation in the context of a polemic against Schenker and Schenkerian analysis and, in particular, Narmour's rejection of an analytical approach in which the outcome (the revelation of the *Urlinie*) is presupposed.[73] However, it isn't clear that, in his own search for universal, "bottom-up" principles, Narmour's own theory escapes this problem. Related to this, Russ[74] has stressed that the implicative effects of given intervals are likely more context-dependent than Narmour suggests – a tritone in Bach will not have the same implicative import as it might have in Bartok, for instance – and, if this is the case, it isn't clear which of the universal, bottom-up or historically contingent, stylistic, top-down factors are to be given precedence. In this respect, it is important to note experiments conducted by Cenkerová and Parncutt suggesting that such bottom-up features are closer to style learning than Narmour would like us to think.[75] Huron and Hippel, meanwhile, attack the symbolic nature of universal constraints such as Meyer's "gap fill", registral direction and return, proposing that such universal, symbolic laws may merely be the contingent effect of constraints on registral tessitura.[76] Whilst, meanwhile, Stevens and Byron have questioned the applicability of Huron's theory to repetitive, dance-oriented music, where there is sometimes minimal melodic or harmonic variation,[77] one of the key problems with such an approach as Huron's has to do with its relation to evolutionary biology – what Biancorosso has suggested is its tendency toward "neurobiological reductivism"[78] – and in particular the assumption that human behaviour can be accounted for simply in terms of the maximisation of adaptive behaviour. To an extent, psychoanalysis develops precisely from the discovery that much human behaviour is, in a sense, constitutively *maladaptive* – that people seem, repeatedly, to work against their own interests – and that these symptomatic impasses *provide their own reward*, conceived in terms of a kind of uncanny, unnatural "enjoyment" – a kind of pleasure of which he was unaware, as Freud puts it with respect to the case of the "Rat Man". In terms of the approach developed in this thesis, the second problem, which is correlative to what Steven Rings has called the "thinness" of approaches based on statistical learning,[79] the seeming aversion to more complex, theoretical accounts of music, is that it fails to account for the extent to which musical experience is characterised by a certain "spatiality" – a certain experiential constitution of music as space, entailing not only points but relations between those points, themselves governed by laws of interrelation, all of which imply movements and directions, anticipations and "retroactions", internal to that space, and irreducible to the formula, "*x* will happen because it has happened most often before".

Musical motion, "image schema" and gesture

The field developed by Meyer, Narmour and Huron intersects with other recent theories of music and motion drawing on work by Johnson and Lakoff on "metaphorical mapping" – an approach we

and Herold, "Aiming Attention in Pitch and Time.

73 Narmour, *Beyond Schenkerism.*

74 Russ, review of Narmour, *Basic Melodic Structures*.

75 Cenkerová and Parncutt, "Style-Dependency of Melodic Expectation".

76 Hippel and Huron, "Why Do Skips Precede Reversals?"

77 Stevens and Byron, review of Huron, *Sweet Anticipation.*

78 Biancorosso, "Whose Phenomenology of Music?"

79 Steven Rings, "Tonic."

discuss in more detail in a later section on metaphor, as well as theories of musical "gesture". In relation to motion specifically, Lakoff's and Johnson's notion of a cross-domain mapping has been developed in the context of work on "musical forces", in particular in the work of Larson, which implies its own theory of musical "expectation".[80] Inspired by both Johnson and the work of Arnheim's application of gestalt psychology to the experience of art,[81] Larson proposes that the experience of musical "motion" and "purpose" are the effect of the "metaphorical mapping" of our (bodily) experience of physical forces – magnetism, gravity and inertia – to the relation between tones. Musical tones, and the movement between such tones, in other words, are constrained by the (metaphorical mapping of the) laws that constrain physical bodies.[82] Larson then develops these ideas into a general theory of melodic expectation, in which listeners expect melodic completions controlled by the forces of gravity, magnetism and inertia. Larson and Vanhandel have subjected Larson's theories to some kind of experimental testing, with participants asked to make judgements about the experienced strength of melodic completions formed according to his laws of musical forces,[83] and they have also been used as a tool for analysing jazz melodies.[84] However, whilst Larson's theory is interesting as a theory of a particular musical "mapping", its claim to be a *general* theory of tonal hearing is at risk of minimising such singularities of listening as are implied, in the context of the concerns of this thesis, by an analysis of Ornette's speech. Whilst the notion of "mapping" is interesting, in other words, we reject the notion that a single, dominant mapping, such as the one Larson's proposes, is capable of taking account of the singularities of musical experience.

This is related to criticisms of the broader field of musical *gesture,* of which Larson's work can be seen as a part. In the context of theories of musical gesture, meaning and movement are articulated together in relation to a focus on the *body*, with a gesture defined by Hatten as "any energetic shaping through time that may be interpreted as significant", where "significant" implies that the gesture conveys information with respect to affect, modality or communicative meaning.[85] Along with Hatten's early work, as well as the work of Lidov on the relation between musical signification and somatic imagery,[86] the study of gesture in relation to music has received a wide articulation, with work investigating both the notion of gesture in relation to the body and embodiment,[87] with a particular attention to the bodies of performers, as well as in relation to cognitive capacities,[88] culminating in two volumes on music and gesture edited by Gritten and King.[89] Given the close relation established between gesture, movement and meaning, it is perhaps unsurprising that some of this work has been done by researchers who have also worked in the field of musical semiotics – both Hatten and Lidov are instances of this – and that this work is sometimes situated at the intersection of these two fields. Thus Kuhl[90] has attempted to offer a gestural rereading of the

80 For an elaborated account, see: Larson, *Musical Forces: Motion, Metaphor, and Meaning in Music.*
81 Arnheim, "Perceptual Dynamics in Musical Expression."
82 Larson, "Musical Forces and Melodic Patterns."
83 Larson and Vanhande. "Measuring Musical Forces".
84 Larson, "Musical Forces, Melodic Expectation, and Jazz Melody."
85 Hatten, "A Theory of Musical Gestures".
86 Lidov, "Mind and Body in Music".
87 See: Juslin and Laukka, "Improving Musical Communication"; Le Guin, *Boccherini's Body*; David, *The Beauty of Gesture*; Dahl and Friberg, "Visual Perception".
88 Zbikowski, *Conceptualising Music*; Parncutt and McPherson, *The Science and Psychology of Music Performance*; Williamon , *Musical Excellence*; Inge and Jørgensen, *Musical Imagery.*
89 Gritten and King, *Music and Gesture*; *New Perspectives on Music and Gesture.*
90 Kuhl, "The Semiotic Gesture".

Saussurean sign, situating the musical phrase as signifier with respect to the musical gesture as signified, both contained in a "sign cascade" in which gesture-signified becomes signifier with respect to the implied movement and emotional states as signifieds. Zbikowski, meanwhile, has offered an account of the grammar that pertains to the "spontaneous" gestures of a piano performance by Fred Astaire. Zbikowski is known for his work on "conceptual metaphor theory", to which gesture theory might be expected to have a close affinity, insofar as the body is conceived as a kind of primary domain, the features of which are then mapped metaphorically to the field of music. However, Zbikowski questions this unidirectionality, suggesting that, in the case of Astaire, the direction of the mapping is reversed, with the structure of musical gestures imposing themselves on Astaire's body.

Criticisms of gesture theory have questioned Hatten's broad definition, quoted frequently in the literature,[91] with Ben-Tal noting that the link between the features Hatten refers to as gestures and their bodily basis is far from clear.[92] Given the link to semiotics and the fact that so many of its central problems – segmentation, the stability of the relation between signifier and signified, the question of the relation between music as signifying and the world external to it – reappear in the field of gesture, there is a question about the extent to which the body and bodily relations, to which gesture theory seeks to give prominence, offer a way through with respect to these problems, elsewhere experienced as impasses, with Kuhl, for instance, claiming, in a particularly overt expression of these hopes, that "the most important, stable element in a musical semiotics is the primary signification from musical phrase to gesture and from musical gesture to emotional content and social belongingness".[93] These criticisms bear on a broader problem with the existing approaches to musical movement, which is the attempt to posit a *general* answer to the question of the relation between music and movement, whether that be Larson's appeal to the experience of physical laws, the image-schema privileging of the body, or Meyer's appeal to the objectivity of Gestalt laws and stylistic norms. Instead, we propose an answer grounded in the singularity of Ornette's speech, albeit drawing on the work of Hamilton on vectors, work on transference, as well as the notion of an order relation. We elaborate on these questions in more detail in chapters III and IV.

3.2 Discourse and Music

In the context of musicology and related fields, discourse has been approached from two broad perspectives – discourse *about* music, on the one hand, and music *as* discourse, on the other. The later work of Nattiez offers an instance of the former, together with those approaches based on Lakoff and Johnson's "cross-modal metaphors", which function, even if not explicitly as such, as the "discourse analysis" of metaphors in speech and writing about music. Examples of the latter include work done by Agawu,[94] as well, in the context of critical discourse analysis, studies by writers such as McKerrell and Way,[95] though the articulation Agawu gives to the notion of discourse

91 Rink, Review of *Music and Gesture*.
92 Ben-Tal, "Characterising Musical Gestures".
93 Kuhl, "The Semiotic Gesture", 123.
94 Agawu, *Music as Discourse.*
95 McKerrell and Way, *Music as Multimodal Discourse.*

is broad enough to include the early paradigmatic analysis of Nattiez,[96] semiotic analysis more broadly, as well as "structural semantics",[97] and work on narrative[98] and topics. However, our approach most bears on questions to do with music *and* discourse, so that will be our focus in the foregoing section.

Any attempt to speak about music, either formally or informally, must, at least implicitly, address the question of the relation between this discourse and its musical object. Is it possible to establish something like a *necessary* relation between music and the words we use about it, for instance, or is the relation always a troubled one, with words always failing to grasp what is really at stake at the level of the music itself? In this section, we consider a number of approaches that, in one way or another, bear on this question, starting with a range of theories dealing with the question of music and "metaphor". However, we also include here a discussion of the "New Musicology", together with approaches with a broadly psychoanalytic orientation, insofar as such approaches imply a relation between music and discourses apparently external to it – the field of ideology, broadly conceived, in the case of the New Musicology, and what might be termed the "discourse of the unconscious", in the case of approaches drawing on psychoanalysis. We then offer a short description of the alternative approach we have developed, as outlined more fully in the succeeding chapters.

Metaphor

The notion of "metaphor" has now received an extensive theorisation in relation to music, with a particular debt to cognitive science, as encountered earlier in relation to the work of Larson. A broader notion of metaphor will recognise, however, the earlier contributions of figures such as Goodman,[99] who considered terms such as "sad", when used in relation to music, to be mere metaphorical transfers from another domain, and Scruton,[100] who insisted that a metaphorical relation between music and space is integral to the experience of music itself. Meanwhile, figures such as Cooke[101] and Lidov[102] have both suggested, albeit in different ways, a correspondence between music and emotion, and Hatten[103] and Ayrey[104] have developed the notion of metaphor in the context of a more structural approach. Specifically, Ayrey has proposed a Jakobsonian/Lacanian rereading of metaphor in terms of the Saussurean axis of substitution, related to the paradigmatic analysis of Nattiez, and Hatten has offered a notion of metaphor in terms of what he calls "troping" – a process in which new meanings arise as the effect of the relation between elements (specifically "topics") produced by positional similarity or substitution. More recently, the Jakobsonian/Lacanian approach to metaphor has also been developed by Smith in relation to 19th century harmony.[105] However, the dominant theoretical articulation of metaphor in relation to music has been in terms of

96 Nattiez, *Fondements d'une sémiologie de la musique*.
97 See for instance, Monelle, *Structural Semantics and Instrumental Music.*
98 For recent approaches to narrative, see Klein and Reyland, *Music and Narrative Since 1900.*
99 Goodman, *Languages of Art.*
100 Scruton, "Understanding music".
101 Cooke, *The Language of Music*.
102 Lidov, *Is language a Music?*
103 Hatten, *Musical Meaning in Beethoven*; Hatten, "Metaphor in music"; Hatten, *Interpreting Musical Gestures.*
104 Ayrey, "Debussy's Significant Connections".
105 Smith, *Desire in Chromatic Harmony.*

"conceptual metaphor theory", developed from the work of Lakoff and Johnson.

For Lakoff and Johnson, meaning has a bodily basis,[106] determined by the patterns of bodily movement, spatial and temporal orientation, and interaction with other objects. These patterns are pre-linguistic, pre-conceptual "image schema" – non-propositional structures organising our mental representations – which are then "mapped" onto more abstract domains by means of "metaphor" – metaphor is, in other words, here conceived as a "cross-domain" functional mapping from physical to conceptual space.[107] An early theorisation of Lakoff and Johnson's notion of metaphor in terms of music was given by Feld,[108] who discerned in the descriptions of music given by the Kaluli people of Papua New Guinea metaphorical connections to other important aspects of Kaluli life. Cook, meanwhile has developed the notion of conceptual metaphors in relation to multiple media, with metaphor offering, he suggested, a general model for the way meanings emerge from their interrelation.[109]

Criticisms of conceptual metaphor theory have come from a number of directions, with the major argument in what Gibbs has called the "metaphor wars" concerning the extent to which inferences about thought and experience can be derived from an analysis of speech and writing; to what extent, in other words, do linguistic metaphors *necessarily* imply what Lakoff and Johnson call "conceptual metaphors", that more fundamental level of metaphor structuring human thought?[110] McGlone, meanwhile, has questioned the empirical basis of conceptual metaphor theory,[111] whilst others have wondered whether the process of metaphor can really be reduced to the question of embodiment,[112] and whether such a reduction leads to a blindness to wider cultural determinations.[113] With respect to music, and from the perspective of Ricoeur's theorisation of metaphor, Spitzer has questioned whether conceptual metaphor theory can really account for the singular nature of metaphor in artistic practice.[114]

In the context of this thesis, we situate the notion of "transference" within a theory of meaning shifts developed from the work of Dugald Stewart and much broader than the one implied by a narrower focus on metaphor. This allows us to draw into our analysis shifts at the level of meaning missed by metaphor-based approaches, as well as analogy, transference in a psychoanalytic sense, as well as homological affinities at the level of the structure of different spaces. We also resist the notion that the body is a privileged domain, rather seeking allusions to the transferences between

106 Johnson, *The Body in the Mind*.
107 Lakoff, *Women, Fire and Dangerous Things*. 283
108 Feld, "Flow Like a Waterfall".
109 Cook, *Analysing Musical Multimedia*.
See also Walser's examination of "force" image-schema in relation to guitar distortion, tracing the metaphorical mapping of the physical experience of distortion to the cultural domain ("The Body in the Music"); Saslaw's exploration of the "container" schema in relation to the harmonic theories of Hugo Riemann ("Forces, Containers, and Paths"); and Zbikowsi's development of the notion of musical analogy, conceived as distinct from metaphor ("Music, analogy, and metaphor"), as well as the notion of "conceptual blending", in which concepts from different domains combine to form new concepts. ("Conceptual blending, creativity and music").
110 Gibbs, *Metaphor Wars.*
111 McGlone, "What is the Explanatory Value of a Conceptual Metaphor?, 109-126.
112 Haser, *Metaphor, metonymy and experientialist philosophy.*
113 Howe, "Argument is Argument".
114 Spitzer, *Metaphor and Musical Thought.*

domains implied by Ornette's discourse.

More generally, however, if we are to talk of spatial "interiors", "boundaries" and "exteriors" in relation to music, or of "motion" through such spaces, the question is the following; do these linguistic elements mark a mapping of, perhaps bodily, experience to the domain of music that is *necessarily* "metaphorical"? Is the musical "space" such terms imply, in other words, always merely *metaphor*? Topology in place of *metaphor* implies that musical spaces are not "like" spaces, they *are* spaces, with properties common to all other such topological spaces, albeit with properties that may also serve to distinguish them – but *not* as space and not-space or space and "space-like". In this sense, musical spaces are not merely metaphoric "generalisations" of physical space – rather, physical space is a *particularisation* of a wider class of both physical and non-physical spaces.

Nattiez and discourse

If "metaphorical mapping" offers one, dominant, approach to the relation between discourse and music, Nattiez has given an account of music and discourse in the context of the tripartite distinction between the "poietic", "esthetic" and "neutral" levels, developed from the work of Molino,[115] with the "poietic" level involving the, for instance, compositional procedures that engender a particular symbolic form, the "esthetic" level the acts of interpretation and perception to which this symbolic form gives rise, and the "neutral" level the text at the level of its organisation or structure.[116] Discourses about music – including academic musicological approaches – can then be categorised in these terms, contingent on the emphasis they put on one or more of these levels. Given Nattiez's conception of the sign, developed from Peirce, in which a sign, or "representamen", is connected to a second sign – its "object" - such that it brings a third sign – its "interpretant" - into a relationship with the same object, with the process of interpretation conceived as infinite, Nattiez's theory implies a wide scope for esthetic interpretation; interpretation, for Nattiez, continues ad infinitum, as any interpretant brings a fourth sign into connection with the same object, and so on.

Much of the criticism aimed at Nattiez involved either the specific status of the "neutral level", on the one hand, or the notion that there exists a clear distinction between the three levels, on the other. Nattiez is careful to disassociate "neutrality" from an untheorised notion of "objectivity" or impartiality, stating that the analysis of the neutral level is always "dirty", marked by historical and cultural determinations. Rather, he states, this "neutrality" is more to do with the *neutralising* of the esthetic and poietic levels, such that the analyst advances analytically without regard to the consequences of such analysis for a particular poietic or esthetic reading of a musical text. Whilst this perhaps makes better sense of what Nattiez is aiming at, some confusion persists, for it is unclear to what extent the "neutral level" does not refer both to the level of physicality, of sonorous matter, *and* the level of symbolic form as such – symbolic form as distinct from the potentially infinite chain of interpretants to which it gives rise, and which constitute the esthetic level. This possible confusion between physical matter and symbolic form – the inability to distinguish one from the other – matters, for it leaves us unable to account for what is happening at the level of "segmentation", precisely the process that introduces a cut in the sonorous real, dividing sonorous

115 Molino, "Fait Musical et Sémiologie de la Musique".
116 Nattiez, *Music and Discourse.*

matter into symbolic forms, waves into signifiers, and which Saussure in his *Cours* represented as the vertical lines punctuating the continuity of material undulations.

New Musicology

We now turn to the "New Musicology", for which the dominant relation is not between music and body, as is the case with work influenced by Lakoff and Johnson, but music and the social, emerging as it did as a response to the perceived myopia of more formal approaches to the study of music. In an influential text predating this work, Kerman had called for an approach, to be called, more appropriately, "criticism", with the ability to pay attention to those aspects of music, including its genesis and values, that would go beyond a narrow, "one-dimensional" focus on its formal properties.[117] In the diverse body of work produced in the decades after this call, such as that of McClary,[118] Kramer,[119] Subotnik,[120] Solie,[121] Brett and Tomlinson,[122] there was a correlative reaction to the perceived commitment within established musicology to musical "autonomy" – the notion that music can be understood without reference to its cultural, social, historical and political contexts.[123] Using a range of tools drawn from fields beyond narrow musicological boundaries, including from critical theory, feminism, queer theory, and continental philosophy, these theorists sought to conceive music not only as lacking in autonomy but as constituted by and constitutive of the social; this was one of the ways in which it was possible speak of the ways in which music had social and political meanings, beyond a narrower focus on musical referentiality.[124]

Not surprisingly, given its challenging and, at times, polemical nature, this work has invited considerable criticism. By pitting themselves against a particular figure of "old musicology" in denial about the relation between music and its wider context, the new musicologists were attacking a "straw man", thought Rosen,[125] for it would be difficult to find anyone who seriously contends that music has no relation to wider contexts – though, as Miles notes, even if traditional musicology rarely states explicitly that music has no social or political significance, this does not preclude it *acting* as though it has none.[126] A perhaps more substantial criticism, however, has to do with the means by which the grounds for a relation between music and its wider context is established.[127] Taruskin, for instance, notes, with some shock, McClary's admission that connections she established between the music of Bach and its social and historical contexts were not all to be taken exactly seriously – rather, they constituted, she said, an "age old strategy of rewriting the tradition in such a way as to appropriate Bach to our own political ends".[128] Even where one considers certain

117 Kerman, "How We Got into Analysis".
118 McClary, *Feminine Endings*; *Conventional Wisdom*; *Music and Society.*
119 Kramer, *Classical Music and Postmodern Knowledge*; *After the Lovedeath*; *Franz Schubert: Sexuality, Subjectivity, Song*.
120 Subotnik, *Developing Variations.*
121 Solie, *Musicology and Difference*.
122 Tomlinson, *Music in Renaissance Magic.*
123 Kramer, *Musicology and Meaning.*
124 Kramer, *Musicology and Meaning.*
125 Rosen, "Music a la Mode", 58.
126 Miles, "Critics of Disenchantment", 37.
127 For a feminist critique from this perspective, see Wiggins, "Women in Music".
128 Taruskin, Richard. "Material Gains", 460.

political goals laudable, there is a question of what is lost in such a cynical disregard for imperatives other than political ones. Miles has noted that what counts as "meaning" in the "New Musicology" is, in fact, often an attention to analogical relations between music and its contexts.[129] This insight might, then, offer a means to mediate between the activist aims of someone like McClary, on the one hand, and Taruskin's resistance to being reduced to a tool in a political struggle, on the other, for the question of "analogy" is not necessarily simply a question of inventive analysts establishing capricious connections between different spheres of experience, contingently thinking one thing "in terms of another", but rather whether, say, the formal properties of music emerge as an *expression* of wider social structures, as a means, that is, by which those structures actually express themselves. Here the relation between music and wider society is, in a sense, "real", not simply a "false" analytic invention; here social structures really are, we could say, the "cause" of musical structures, and, in this sense, all that is left to establish is that this is actually the case – no small analytic feat. Though this thesis does not concern itself with politics directly, our commitment to an analysis of Ornette's discourse is, in a sense, an attempt to find a solution to a related problem.

Psychoanalytic approaches

Some of the problems confronting the "New Musicology" also present themselves to approaches attempting to orient themselves with respect to psychoanalysis, insofar as there is an attempt to link music to specific psychoanalytic phenomena to which music, at least on the surface, may appear to have no immediate relation. There is thus a question of what constitutes the foundations for such links where they are made, and thus, correlative to this, what it is that elevates such analyses above a mere imposition of theory. This question is consistent with the objections made to the project of the New Musicology more broadly, as we have seen. Early, psychoanalytically-informed biographies of composers, at times displaying the pitfalls of naively biographical approaches, sought, for instance, to explain the music of specific composers in the light of significant losses in their personal lives. Other studies have attempted to account for aspects of musical experience in terms of broader psychoanalytic theory and concepts, often linking musical experience to early infant experiences of sound – Kaja Silverman's discussion of the "acoustic mirror",[130] is an instance of this approach – whilst, more recently, Wilson[131] has attempted to account for musical subjectivity in terms of the psychoanalytic notion of identification, Smith has investigated the music of Skryabin in relation to desire, Pow[132] has given an account of the reception of Beethoven's music in relation to the concept of "resistance", and Tarrant[133] has read the ideological function of traditions of Schubert analysis with reference to the category of fantasy.

Although recent work linking music and psychoanalysis has often positioned itself as "Lacanian", Smethurst has suggested that much of this work is, in fact, Zizekian rather than Lacanian, relying more on philosophical than strictly psychoanalytic notions of the Lacanian "real", for instance.[134] Many of these studies do reflect Zizekian priorities, as articulated in Zizek's early works

129 Stephen Miles, "The Limits of Metaphorical Interpretation".
130 Silverman, *The Acoustic Mirror.*
131Wilson, "Does the Psychoanalysis of Music Have a "Subject"?
132 Pow, "Symbolic Listening".
133 Tarrant, "Schubert, Music Theory and Lacanian Fantasy".
134 Smethurst, "Say No to Lacanian Musicology: A Review of Misnomers".

popularising Lacan's thought,[135] in which Lacan's concepts are explored in relation to an analysis of ideology. For instance, the notion of a "quilting point" – Lacan's *point de capiton* – is a key term in Harper-Scott's work on modernism;[136] *desire*, particularly the "graph of desire", which first appears in Lacan's *Subversion of the Subject*, forms a key theoretical coordinate in Kenneth M. Smith's text on Skryabin,[137] as well as in Harper-Scott's text; and the notions of the *real*, *object a* and *jouissance*, feature in Fink,[138] Schwartz[139] and Klein[140]. Other than the (perhaps difficult to avoid) misunderstanding of Lacan's work it may produce, one potential symptom of a more philosophical, Zizekian approach is that the domain of the signifier and signification is downplayed, a problem to the extent that an attention to the signifier is vital if one is to make connections between music and psychoanalysis as a clinical practice. Here it is worth mentioning an important, albeit brief, article, in which the philosopher Francois Regnault describes music as the "unconscious exercise of a cure where the subject is unaware that he is healing".[141] If this is to be taken seriously, and if an attention to the signifier is vital to acts of psychoanalytic interpretation that move the analysand towards points of curative realisation (a matter of some contention, perhaps), then we discard the "classical" Lacanian focus on the signifier at our peril. In this regard, Smith's more recent work[142] developing the notion of metonymy and metaphor to harmonic chains and substitutions seems to us a move in the right direction.

Music and discourse – our approach

Our approach is distinct from current psychoanalytic approaches in a number of ways. First, it does not seek to "apply" psychoanalytic theorisations to music; rather, it aims to develop tools from psychoanalysis in order to develop new ways to listen to Ornette's speech. Second, it avoids the implication that the analysis of speech it presents constitutes any kind of analysis – or, worse, a kind of speculative "diagnosis" – of the author of this speech. Rather, it seeks to develop analytical tools from a psychoanalytically-informed discourse analysis in order to give attention to what might be implied at the level of Ornette's speech for new ways to listen to his music as space and movement through that space, in the context of the question of what it means to follow.

In our work, we replace "metaphor" with *transference*. Whilst transference *includes* metaphor, transference, we suggest, is the more general term, allowing us to draw together metaphor, analogy and metonymy, notions from psychoanalysis, as well as broader shifts at the level of meaning that would be passed over in a more narrow focus on metaphor, or in an approach that attempts to make metaphor the central term. Not all transferences, in other words, are metaphors. And, if the field of "metaphorical mapping" would seek to make the body a privileged domain, we assert no such prior privilege. Instead, using an analysis of discourse that includes the notion of transferential shifts as a central tool, and without identifying the authority of speech with the authority of authorial *intention*

135 Zizek, *Looking Awry*; *The Sublime Object of Ideology.*
136 Harper-Scott, *The Quilting Points of Musical Modernism.*
137 Smith, *Skryabin, Philosophy and the Music of Desire*.
138 Fink, *Repeating Ourselves.*
139 Schwarz, *Listening Subjects*; *An Introduction to Electronic Art.*
140 Klein, *Music and the Crisis of the Modern Subject.*
141 Régnault, "Psychoanalysis and Music".
142 Smith, *Desire in Chromatic Harmony.*

regarding that speech, we attempt to discover implications of other "cross-domain" transferences in Ornette's speech – implications that would be missed where the centrality of the body is given in advance.

3.3. Space

Let us turn finally to the question of music and space. In this section we will deal with those approaches that conceive of music as space – or that, at least, imply this conception – beyond any reference to "metaphor". In this sense, the key approaches are those that develop tools from mathematical accounts of space, with particular attention to geometrical approaches, though approaches developed in relation to mathematical set theory will also be reviewed, insofar as set theory forms the "metaphysical" foundations for general topology – the most general account of space and spatiality in mathematics.

Set Theory

Whilst it is sometimes identified with the work of Forte,[143] pitch-class set theory can be traced to the work of Milton Babbitt,[144] developed later by Forte, Morris,[145] Rahn[146] and Strauss,[147] amongst many others. Broadly speaking, pitch-class set theory has attempted to conceive of musical sets or collections in terms of collections of pitches or pitch-classes, on the one hand, and pitch intervals or pitch interval classes, on the other, depending, in both cases, on the assumption of octave equivalence. Given these objects, it has then defined operations on these sets, with transposition and inversion canonical amongst these, as well as relations between these sets, with priority given to equivalence, similarity and inclusion. A piece of music can then be analysed as a structure of sets and their interrelation, without necessary recourse to the structures implied by, for instance, tonality. It thus solves a methodological problem with regards to the work on certain atonal music, with respect to which it might have certain affinities (a 12-tone series considered without respect to register or direction, for instance, could be considered to imply an ordered pitch-class set).[148]

As might be expected, pitch-class set theory has attracted some sharp criticism. Kerman, for instance, included the theory of pitch-class sets in a catalogue of approaches he criticised for a narrow, "one-dimensional" focus on formal properties, with their reductive attempts to prove the organic "unity" of such work in danger of missing the "fragile artistic content" that is nonetheless necessary to explain its effects.[149] This can be related to the question of "hearing"; does the theory of pitch-class sets make sense of how we *hear* a piece of music, either at the level of the sets themselves or at the level of the relation between them? Do we actually hear sets and subsets or similarity relations between sets, defined as they are, for instance, in Forte's theory? And doesn't the apparatus of pitch-class set theory constitute, in a sense, a radical impoverishment of the relations

143 Forte, "A Theory of Set-Complexes for Music"*;* Forte, *The Structure of Atonal Music.*
144 Babbitt , "Set Structure as a Compositional Determinant".
145 Morris, *Composition With Pitch Classes.*
146 Rahn, *Basic Atonal Theory.*
147 Strauss, *Introduction to Post-Tonal Theory.*
148 For an overview of the development of pitch-class set analysis, see Schuijer, *Analysing Atonal Music*.
149 Kerman, "How We Got into Analysis".

we do hear, analysed away by the radical equality of pitches and intervals conceived in terms of various forms of equivalence? Both Benjamin[150] and Lerdahl[151] have drawn attention, or instance, to the problem of *segmentation* in pitch-class set theory – a problem, perhaps, for any theory with a "syntactic" emphasis. What resources does pitch-class set theory have internal to itself, in other words, to determine what counts as a "set"? What is there to stop an analyst from producing collections so as to arbitrarily impose theory-reinforcing structures on an unsuspecting musical text?

For us, these criticisms are both well-founded and, if they cause us to reject the resources of set theory altogether, mistaken. Leaving aside the question of *how*, do points in a piece of music – whatever those points are (melodies, notes, rhythms, and so on) – form collections? Can we conceive of a melody or a chord as, at least in part, a collection of points? If the answer is yes, then set theory would seem to offer us some resources, though from there it is perhaps necessary to proceed carefully, so as to take note of the other relations that pertain to such collections, whether they be relations of order, tonal relations, or whatever relations we determine to be pertinent to an experience of music at a particular moment. In the context of this thesis, these relations are those implied by Ornette's speech. We give a more detailed account of our relation to the notions of set theory in the relevant passages in the thesis.

Neo-Riemannian Theory

Though there are significant overlaps, pitch-class set theory, suggests Buchler, has to an extent now been supplanted by forms of "transformational" analysis as the predominant mode of analysis with respect to non-tonal works.[152] As a sub-field of this wider transformational field, and developed from the David Lewin's approach to triadic relations, Neo-Riemannian theory has emerged specifically in response to the analytical difficulties posed by chromatic music, such as the music of Wagner and Liszt, that is triadic but not "tonally unified"[153] – where in other words, the kind of triadic harmony associated with tonality appears, but not in a form amenable to tools offered by established approaches to the study of tonal harmony and its relations. Neo-Riemannian theory is, at least to an extent, an attempt to explain what relations do govern such chromatic spaces, if not tonal ones. This work has developed in the context of Lewin's notion of a "transformation", defined by Lewin as, "something one does to a Klang [sonority] to obtain another Klang".[154] We discuss Lewin's transformational theory in more detail shortly.

In a 1982 text, Lewin proposed two classes of transformation, developed further in his *Generalised Musical Intervals and Transformations* (henceforth referred to as *GMIT*) – "contextual inversion", on the one hand, which maps between major and minor triads by means of inversion, and a set of transformations, on other other, that map triads to one another by means of lateral movement along a linear set of enharmonically-conceived pitch classes composed of alternating major and minor third intervals.[155] Hyer introduced a version of the 19th century "Tonnetz" – a table of tonal relations

150 Benjamin, review of Forte, *The Structure of Atonal Music.*
151 Lerdahl, "Atonal Prolongational Structure", 66.
152 Buchler,"Are There Any Bad (or Good) Transformational Analyses?"
153 Cohn, "An Introduction to Neo-Riemannian Theory".
154 Lewin, *Generalized Musical Intervals*, 177.
155 Lewin, "A Formal Theory of Generalized Tonal Functions".

popular with 19th century music theorists – that showed triads as interrelated triangles on a graph composed of the three intervals that make up major and minor triads.[156] Then Richard Cohn noted that the "contextual inversions", proposed by Lewin and developed by Hyer, display "parsimonious voice leading" – shifts requiring movement of the points of that triad by no more than one or two semitones, thus opening up the possibility of parsimonious pathways through the space of the Tonnetz.[157] Drawing in Forte's work on pitch-class sets, Cohn could then conceive of such parsimony in terms of a subclass of sets capable of movement entirely by semitone – a development which led to the notion of a "Cohn Function",[158] as proposed by Lewin in 1996, as an algorithm for the constitution of such classes. Cohn's ideas concerning voice-leading parsimony were given a fuller form in Cohn's later work,[159] and, more recently, an extensive and critical development in Tymoczko's work on music and geometry, which takes "efficient" voice leading to constitute a kind of normative principle governing movement between chords in Western music – a kind of "law of the shortest way".[160] Tymoczko has recently also given his geometric approach a theorisation in terms of algebraic topology.[161]

Although the concerns of New-Riemannian authors are relevant to our work, the problems emerge insofar as they constitute attempts at *general* theories of musical experience, where the use of words such as "often", "conventionally", "usually", "commonly", belie the attempt to constitute a set of *norms* governing musical experience for some "general" listener – for any listener, that is, insofar as they do not deviate from the chosen norm. For instance, when the work of Cohn turns its gaze to the music of a specific time period (the 19th century), the notion that the problems it seeks to address are "writ large" across the music of that period is nonetheless in danger of doing some violence to the singularity of the specific music addressed. In this respect it is worth noting that the Neo-Riemannian approach has been subject to some experimental testing, with Krumhansl finding that, in relation to the perception of relative triadic "proximity" (the experience that two triads are "close" to one another in some space), the proximities implied by the approach based on parsimonious voice leading is more likely to be experienced as significant by experimental subjects without a musical training.[162] Again, our own solution to these problems has been to prioritise Ornette's speech, where it is possible to find specific and singular answers to the very questions at the heart of Neo-Riemannian theory, yet quite different from the ones that it would lead us to expect. Chapter VI will deal with these in some detail.

Transformational theory

Lewin's most significant contribution, however, is his *GMIT*, in which the notion of interval function is developed in the context of a deployment of mathematical group theory.[163] Lewin's work takes as its starting point the intuition that musical intervals are experienced as the "directed

156 Hyer, PhD dissertation.
157 Cohn, "Maximally Smooth Cycles, Hexatonic Systems"; "Neo-Riemannian Operations".
158 Lewin, "Cohn Function".
159 Cohn, *Audacious Euphony.*
160 Tymoczko, "The Geometry of Musical Chords" and *The Geometry of Music.*
161 Tymoczko, *Why Topology*?
162 Krumhansl, "Perceived Triad Distance".
163 Lewin, *Generalized Musical Intervals and Transformations.*

measurement, distance, or motion" of musical point in some symbolic musical space, which he then conceives as functions that, as transformational operations, move each element in an "argument" (a set of musical elements, say pitches) to a unique element in the "image" or "value" (another set of pitches). (This, of course, is simply to recapitulate the more general mathematical definition of a *function*.) If Lewin's system of musical intervals are "generalised", this is in part insofar as the conception of intervals as directed motion, experienced intuitively with respect to pitch, can be generalised to musical differences more broadly such, so that the notion of "interval" can now also be taken to cover time points, harmonies, timbral spectra, and so on. However, Lewin's theory also aims to account for transformations that are non-operational – that do not move the argument to a unique value, and that do not have an inverse.

More recently, Rings has attempted to adapt Lewin's transformational approach for tonal analysis. In Rings' "tonal GIS" (generalised interval system), the GIS are enharmonically-equivalent pitch-class "chroma" – a term Rings leaves somewhat undefined – on the one hand, and scale-degree "qualia", on the other, with the latter conceived as the "raw feels" of scale-degree-ness, implying a shift from sounds as acoustic to sounds as cognitive entities. Given these coordinates, Rings defines a space *S* of this GIS as all 84 ordered pairs of the type (sd, pc), or (scale degree, pitch chroma), a mapping that formalises the experience that a given pitch class chroma *is* the scale-degree – 5^{th}, 6^{th}, and so on – at a particular point in a piece of music. Perhaps the most interesting part of Rings' theory, however, is his use of the notion of an oriented network - a collection of "nodes" and "arrows" – to show the tonic-directedness implied by an experience of tonal hearing – all "nodes" in a tonally-oriented network point, directly or indirectly, to the tonic – a theorisation that formalises many accounts of tonal experience from Rameau to Riemann. In order to link tonality to hearing, Rings casts this directedness in terms of phenomenological intention; in a sense, tonal directedness is something that the listener *does* – a "subjective pointing of the ears *from* some subordinate tonal element *to* the tonic".[164]

Critiques of transformational work have come from a number of directions. Though there has been some work on cross-type transformations, in classic transformational analysis, as Buchler notes, there must be a uniformity at the level of the elements analysed – an internal constraint that is in danger of producing the music in the service of the analysis, rather than the other way around.[165] For Mazzola, Lewinian transformations are to be seen as the processural form of a more basic level – the level of gesture – at which, Mazzola thinks, all such Lewinian processes are initiated.[166] Tymoczko, meanwhile, notes that there is no standard term in Lewin's account for *specific* directed motion, as opposed to a more generalised function, such as a "descending major third".[167] Such a specific conception is needed, Tymoczko argues, to account for the importance of, say, the particular descending motion G-Eb in Beethoven's Symphony no 5, rather than any other equivalent instance of this motif at the level of intervallic function. Tymoczko links this to a more general point, which is that particular directed motions cannot always be converted into generalised functions, giving two examples of spaces – a key instance is of vectors on a spherical space – in which there is a limit to such a process of generalisation. Tymoczko's other criticisms concern, first,

164 Rings, *Tonality and Transformation*, 106.
165 Buhler, "Are There Any?"
166 Mazzola, *Free Jazz*.
167Tymoczko, "In Quest of Musical Vectors".

Lewin's requirement that intervals always be defined at every point in the space – he gives the problem of a space with boundaries in which there is an inherent limit to such transportability – and, second, insofar as Lewin defines intervals as functions, he is unable to account to distinguish G – Eb from its transposition – F – Db – or the situation in which there are multiple pathways between the same points – it cannot distinguish for instance, "G moves up by eight semitones to Eb" from "G moves down by 4 semitones to Eb". Tymoczko's solution to these problems, which he borrows from contemporary geometry, is to model such progressions as "vectors in the tangent space" of a particular point on a circle of octave equivalence, drawing the "vector" as a one-dimensional line approximating an infinitely small region of the circle, with the vector represented as real numbers, such as -4 and +8. In this "infinitely small" region of space, traditional geometrical intuitions can be safely applied.

With respect to Ring's "GIS", much of Rings' elegant approach is compatible with our own, and, in particular, his emphasis on the directed nature of tonal experience is important to our discussion of a tonic oriented space in chapter V; we make our connection to Rings clear in the context of that chapter. However, the most significant problem has to do with what he calls pitch "qualia", where there is a failure to makes sense of the relation between pitch class "chroma" and scale-degree "qualia", which introduces a cumbersome quality, a heavy-handedness, at the level of his system, presenting, as it does, chroma and qualia as somehow equal entities, aligned as they are along the *x* and *y* axes of his tonal GIS grid. This does some disservice to the sense that "qualia" are fragile and fleeting *effects*, emerging contingently from the interrelation of the points he calls "chroma", rather than entities pre-existing these relations, waiting, ready-made, on some independent axis, to be fused to with chroma in an act of tonal hearing. A sense of this contingency, we argue, is necessary in order to account for what is really at stake – a certain "disavowal" – in the experience of fusion he perceptively describes, as we discuss in some detail in chapter VII.

Tonal Pitch Space

Ring's tonal "GIS" develops some of the concerns at the heart of the notion of a "tonal pitch space", a term closely associated with the tonal distance space of Lerdahl, though the notion that tonal space is characterised by a hierarchy of pitches, arranged with respect to a tonic, is to be found in many approaches to tonality. In the work of Krumhansl,[168] such hierarchies are the effect of prevalence; listeners internalise "key profiles" reflecting the relative incidence of the various pitch classes in major and minor keys, with the tonic dominating this hierarchy insofar as it appears most often. Here, the establishing of the hierarchy that pertains to a key is little more than a counting exercise, in which the tonic comes out on top, and key identification entails the matching of an internalised profile to statistical incidence in the experience of a particular piece of music, an approach developed in the work of Temperley,[169] Huron,[170] Aarden,[171] and others. In the "tonal pitch space" proposed by Fred Lerdahl, this hierarchy is conceived in terms of the arrangement of pitch classes at relative distances from the tonic, which Lerdahl devises as constrained steps through a

168 Krumhansl and Kessler, "Tracing Tracing the dynamic changes in perceived tonal organization".
169 de Clercq and Temperley. "A Corpus Analysis of Rock Harmony."
170 Huron, *Sweet Anticipation.*
171 Aarden,, "Dynamic Melodic Expectancy."

hierarchy of layers, up from a chromatic pitch class layer at the bottom, through diatonic, chord and fifth pitch class layers, to a layer with just the tonic at the top. Now the fifth can be conceived as closest to the tonic, followed by the third, then by the other diatonic pitch classes, and, finally, as furthest away (more or less), by the chromatic pitch classes, with variations for the different enharmonic spellings of the same pitch class.[172]

One significant issue with Lerdahl's approach, for all of its attention to perception, is that it attempts to propose a *general* model of hearing, which, given that any hearing is a *hearing*, rather than something necessarily immanent to the sounds heard, must then be supported by a theory of how such hearings can be general, likely entailing a recourse to something like a theory of "competence", which itself relies on the supposed existence of stable norms, the knowledge of which constitute what counts as "competent". Ornette's work, with its emphasis on the importance of divergent hearings, calls such assumptions into question. In fact, such a criticism could be taken to pertain to many of the mathematical approaches discussed here – the question of for which listeners exactly the relations elucidated are supposed to apply. One response to this might be that mathematical relations pertain to musical sounds and their various configurations *regardless of whether any listener experiences them or not*, and, in this sense, the question of experience must not be allowed to tyrannise over an approach that seeks to investigate those relations.[173] In one sense, this makes the stakes clearer, distinguishing experience-oriented approaches from those for which experience is to be minimised, though it is worth asking to what extent those features taken to be in a particular form of mathematical relation are not themselves dependent on experience, whether there is ever an approach that does not start with a certain assumption at the level of what is really there, an assumption with the form of something like, "we start by assuming the existence of points, x and y".

4. Conclusion

Whilst the work we have reviewed in this chapter has many points of overlap with our own approach, significant problems emerge, which this thesis seeks to address. One key problem is the problem of generality – the attempt to develop a *general* theory of musical experience, whether this be the generalities of Larson's approach to musical motion, Meyer's normative "objectivities", the image-schema privileging of the body, or the forms of spatial features implied by Neo-Riemannian theories, set theory or transformational theory. Such a generalising approach risks banishing experience that does not conform to such generalities to the borderlands of (albeit excusable) "incompetence" or worse, a danger with particular prevalence in the case of a musician with an ear as unusual as Ornette's. It is for this reason that we have developed an approach to these questions oriented by an analysis of discourse – in short, we start with discourse analysis, the product of which then suggests tools, as well as the particular mode in which these tools are to be used, so as to give a singularly Ornettian answer to the question of what it means to follow, what it means "to go where I go", both in the sense of space, as well as movement through that space. However, if such an approach risks making of the author an authority, we propose to shift the emphasis to the authority of Ornette's speech; using tools developed from a Lacanian discourse analysis, we pay

172 Lerdahl, *Tonal Pitch Space.*
173 Schuijer, *Analyzing Atonal Music.*

attention to what is implied by Ornette's discourse about the question of what it means to follow distinct from authorial *intention* regarding this speech.

With respect to current approaches to discourse, we then offer a further distinction, which is that our approach develops the notion of *transference*, with its roots in the philosophy of the Scottish Enlightenment, as a central tool in our analysis of discourse, allowing us to link metaphor and analogy to meaning shifts irreducible to neither, as well as to notions in mathematics, literary theory and psychoanalysis, at times with a direct bearing on the question of what it means to follow. Such an approach is distinct from current theories of "metaphorical mapping" that put metaphor central stage, for the reason that it discovers transference as the most general, and thus most versatile, term. These features will be discussed more fully in the following chapter.

III. Tools

1. Introduction

In this chapter, we introduce the main tools used in this thesis – elements of a *Lacanian discourse analysis*; *transference* – implying a notion of *signifier*; *relations*; and elements from *neighbourhood topology.* Whilst they cover a broad field, these four main tools can be collected under two main themes; first, an approach to the analysis of discourse in which transference plays a key, structuring function; and, second, an approach to space as characterised by particular forms of relation, which may also constitute the *vehicle*, the means of movement through that space. In what follows, we deal with each tool in turn, offering 1) a description of the tools used 2) why they are useful with respect to the problems and questions the thesis seeks to address, and 3) why they are to be preferred to tools already existing and in use.

2. Discourse Analysis

There is now a wide range of approaches that bear the name "discourse analysis", each governed by a series of conceptual and methodological tools, orienting researchers to the analysis of specific aspects of language, and each implying different notions of what constitutes "discourse".[174] Thus, in the context of linguistics, "discourse" may be understood in terms of linguistic constructions constituted by sequences of sentences, with an analysis of discourse situated at this level, rather than at the level of the construction of the sentence itself.[175] In other contexts, there may be an accent on communication,[176] on language use more broadly,[177] or on the relation of language use to specific social orders, which these uses both reflect and produce.[178]

Given its focus on use, the analysis of discourse has discovered resources in philosophical pragmatics, such as the work of Grice on conversational "implicatures",[179] concerned as it is with the meaning of utterances in specific contexts of use, as well as in Austin's and Searle's analysis of "speech acts",[180] with their focus on speech as transformative action. Meanwhile, other forms of small-scale analysis have drawn on work on the formal properties of talk developed by Sacks,[181] with the ethnomethodological approach of Garfinkel attempting to uncover the structures of social orders as manifest in the structures of talk.[182] On the continent, and in particular in France,[183] the development of discourse analysis can be traced to two formal approaches in linguistics – the work of Zellig Harris,[184] on the one hand, who sought to uncover the syntactic and transformational rules which govern the formation of a discourse from individual sentences, and, on the other, the

174 Parker, *Psychology After Discourse Analysis*, 9.
175 Crystal, *Linguistics*, 201 – 2.
176 Benveniste, *Problems in General Linguistics.*
177 Brown and Yule, *Discourse Analysis*, 1.
178 Fairclough, "Introduction", in *Critical Language Awareness*, 8.
179 Grice, "Logic and Conversation".
180 Austin, *How To Do Things With Words*; Searle, *Speech Acts.*
181 Sacks, *Lectures on Conversation*.
182 Garfinkel, *Studies in Ethnomethodology.*
183 An overview of the development of discourse analysis in France is offered in Angermuller, *Poststructuralist Discourse Analysis.*
184 Harris, *Discourse Analysis.*

structural linguistics of Ferdinand de Saussure,[185] which attempted to identify the rules by which the smallest elements of a linguistic system could be selected and combined into sentences. If the influence of Harris is to be felt on Chomskian grammar, as well as Pêcheux's "automatic discourse analysis",[186] Saussure's structuralist approach was to influence the work of linguists and theorists Emile Benveniste, Louis Hjelmslev and A.J Greimas, as well as many semioticians, including Barthes and Baudrillard. In the context of political theory, an important moment in the development of discourse theory and analysis was the publication of *Hegemony and Socialist Strategy*, in which Laclau and Mouffe reread Gramsci's notion of "hegemony" in terms of a general theory of discourse, conceived in terms of Derridean undecidability, Foucault's work on power, and the Lacanian notion of a "point de capiton", or "quilting point", which we discuss later in this section.[187] Whilst we do not draw directly on Laclau and Mouffe's work in this thesis, Laclau and Mouffe's work offers a crucial point of intersection between psychoanalytic theory and the field of discourse analysis, particularly in relation to Lacan's "point de capiton", with the work of the psychoanalyst and discourse theorist, Ian Parker, whose work we draw on directly, constituting a significant development and amplification of these connections.

2.1 Lacanian discourse analysis

In his article, "Lacanian Discourse Analysis in Psychology",[188] Parker has constructed an account of discourse from the work of Jacques Lacan, as well as from clinical and cultural practices informed by his work, considering its consequences for the way we conceive of seven key elements – (i) the formal qualities of texts (ii) the anchoring of representation (iii) agency and determination (iv) the role of knowledge (v) positions in language (vi) deadlocks of perspective (vii) interpretation of textual material. These consequences are then taken as potential points of orientation in a new field of Lacanian discourse analysis. However, although Parker is willing to delineate the contours of a new, Lacanian approach, he insists that it does not thereby constitute a complete, or even necessary, "method". Rather, as with the (non)existence of "cases" in psychoanalysis, each text is to be taken one by one, with the singularity of each instance offering the occasion for the elaboration of new tools and theory. We take this last point seriously, though a number of the features that Parker discerns in Lacan's approach to discourse are of direct relevance to this thesis, and we will focus on these in the foregoing discussion. These features are – *discourse* as *discourse of the Other*; *deadlocks of perspective*; *attention to structure*; and the notions of *retroaction* and *quilting.*

Discourse of the Other

In the early 1950s, discourse is conceived, for Lacan, in terms of the *discourse of the Other*;[189] the unconscious, he suggests, is "the discourse of the other", implying there the effects on the speaker of speech from another scene – something, perhaps, overheard or read between the lines in another's speech – which, although repressed, then manifests itself at the level of his own discourse in the

185 Saussure, *Course in General Linguistics.*
186 Pêcheux, *Automatic Discourse Analysis.*
187 Laclau and Mouffe, *Hegemony and Socialist Strategy.*
188 Parker, "Lacanian Discourse Analysis in Psychology".
189 Lacan, *Ecrits*, 61.

form of symptomatic acts or linguistic formations. In Parker's reading of Lacan's formulation, an analysis of what is unconscious to the subject is an analysis of the "gaps" and "holes" that appear when whatever is said at any particular moment presupposes that something else cannot, or will not, be said. In the context of a Lacanian approach to the analysis of discourse, therefore, says Parker, the unconscious is what functions as an absence in the text.[190]

Deadlocks of perspective

If agreement between analyst and analysand with respect to a particular interpretation indicates the operation of the "line of the imaginary" – the dimension Lacan delineates as that of similarity and difference, meaning and of rivalrous identification – the analyst is exhorted to keep to the "line of the Symbolic", to the level of language as linguistic structure, conceived in terms of "absolute difference".[191] Parker links this to the priority of *disagreement*; rather than asserting a common view of the text, a Lacanian approach to discourse analysis would draw attention to the stakes of interpretative disagreement, to the points at which agreement fails.[192]

Attention to structure

Analysis, in Lacan's account, says Parker, pays attention to *structure* – to the organisation of signifiers – rather than to an uncovering of signifieds, with such structures conceived in terms of a Saussurean "system of differences".[193] In Lacan's terms, an act of analysis is thus "to obtain absolute difference" – to lead the analysand to an experience of language as relational, as differential, rather than as a system of "positive terms".[194] Parker links this to Lacan's formulation that "the signifier is what represents the subject for another signifier"; signifiers are oriented with respect to other signifiers, to later terms in a sequence of signifiers, rather than to meanings or to perceiving subjects.

Retroaction

If the signified emerges as an effect of a relation between a signifier and its context, and if the relation between such signifiers is *ordered* – as in the temporal unfolding of a sentence or of a melody – then this must also mean that signifying effects emerge "retroactively"[195] – retrospectively – contingent, that is, on the appearance of a context of later signifiers, which "act back" on signifiers that come before. In this sense, proposes Lacan, meaning does not "consist" in any particular signifier, but "insists" in the anticipation of the effects of an unfolding chain.[196]

190 Parker, "Lacanian Discourse Analysis", 171.
191 "Lacanian Discourse Analysis, 175.
192 "Lacanian Discourse Analysis, 175.
193"Lacanian Discourse Analysis, 167.
194 "Lacanian Discourse Analysis, 168.
195 Lacan, *Ecrits*, 53.
196 *Ecrits*, 170.

Quilting

However, if the relation between signifier and signified is constantly shifting, there are nonetheless certain points of "quilting" or "anchoring" – Lacan termed this the "point de capiton"[197] – that keep the fabric of a signifying system in place. Parker links this to Lacan's notion of a "master signifier", represented in Lacan by "S_1" in the "matheme", $S_1 \rightarrow S_2$, where "S_2" stands for entirety of the signifying system. S_1 may perform an "anchoring" function by means of dominating repetition – either simply at the level textual recurrence, or in the form of rhetorical tropes that use repetition in place of rational argumentation – "this is the way things are, because this is the way things are".[198]

Retroaction and quilting, says Parker, are related, as the constitution of meaning is linked to the determining function of punctuating endpoints – endpoints "retroactively" perform a "quilting" function, establishing a relation between signifier and signified – and a Lacanian analysis of discourse will thus pay attention, says Parker, to the signifiers that constitute points of conclusion or ending, whether at the level of sentences or other textual structures. Insofar as "retroaction" inverts the temporal order of cause and effect, positing what comes before as an effect of what comes after, such an approach complicates any attempt at a "predictive" approach to signification.

Why Lacanian discourse analysis ?

In the psychoanalytic clinic, there is a kind of safeguard against the narcissism of the analyst, which is the ability of the analysand to answer back, to refuse an interpretation, or to simply walk out – gestures all of which may serve to remind the analyst that they are not the only one in the room. With the analysis of a text, or a piece of music, such safeguards are less in evidence, no matter how much the analyst insists on their commitment to interpretative plurality. However, even in a clinical context, the problem may be more complicated than it first appears, for such acts of apparent "resistance" may themselves need to be analysed – they may mark, in other words, not so much an indication of analytic "error" as a reaction to something that intimately concerns the analysand's suffering, and of which the analysand would prefer to remain unaware. To treat the analysand as an "authority" with respect to interpretation is thus to miss the extent to which something else speaks in these acts and gestures, something other than the conscious discourse on interpretation the analysand may imagine such acts to be.

What has "authority" in the clinic is thus not so much the analysand, as the analysand's *discourse*, which is "Other", in one sense, at least, to the extent that it says something other than what the analysand imagines it to be saying, insofar, that is, as it resists being reduced to what the analysand imagines is their intention. This something "Other" speaks in the classic paraphernalia of slips and homonyms and jokes, in symptomatic acts, as well as in shifts and failures at the level of logic, all of which may allow the analysis to draw closer to something that concerns the analysand's impasses, and which the analysand may prefer not to have drawn to their attention. It is in this sense that we give an authority to Ornette's spoken discourse, working through its problematic implications, not seeking to ask Ornette what his music "means", but asking what Ornette's spoken

197 Lacan, *The Psychoses*, 267.
198 "Lacanian Discourse Analysis", 170.

discourse implies about his music as space and movement through that space. Our approach to Ornette's music is thus, in a sense, "indirect"; rather than rely on some imagined interpretative sensitivity on the part of the analyst, we interpose Ornette's speech between interpretation and (musical) text, allowing it to function as direction and orientation for our analysis. It thus also enables us to answer a question confronting any approach avowing that analysis is, in some sense, a constitution of the thing it analyses; how does one analyse without assuming that the object of one's analysis is somehow given in the sounds, or there on the page, self-evident to any (usually "competent") listener – which is perhaps another way of asking the question, how does one avoid the narcissistic enterprise of seeing oneself reflected in the text? As such, this notion of "discourse analysis" also enables us to answer the question; what does it mean to *listen* to Ornette? If Ornette's own words about his music are to be taken seriously as an attempt to articulate something about the relations governing its constitution, as well as those that relate these musical relations to relations outside his music, how does one give proper attention to these words, without treating these words as identical with a notion of authorial intention, on the one hand, or attempting to make them a complete and consistent system, on the other?

Our attention to discourse thus aims to distinguish itself from the full range of what might be termed "competence" approaches, where "competence" implies the analytic grasp of some general set of rules or normative strictures external to a particular piece of music, of which that piece is nonetheless taken to be an expression. In this sense, Meyer's emphasis on gestalt laws and stylistic norms, the grammatical approach of theorists such as Lerdahl and Jackendoff, the insistence on quasi-mechanical laws governing musical motion, as in Larson, as well as the more recent insistence on the primacy of "gesture", all, in a sense, have something in common with "competence" approaches, insofar as they seek to posit some abstract, external point of reference orienting the composition and analysis of a piece of music, regardless of the singularity of its conception.

3. Transference

Transference is perhaps most closely associated with psychoanalysis, but its origins are to be found in the thought of the Scottish Enlightenment, and in particular in the theory of meaning shifts proposed by Dugald Stewart in 1810, in which Stewart, in effect, discovers a *law* governing shifts at the level of meaning.[199] It is not clear whether Freud read the text in which these ideas were first articulated, but we know that he did read John Stuart Mill's *System of Logic*, where Stewart's ideas were not only discussed, but quoted directly, and even given some development in terms of Mill's theory of specialisation and generalisation.[200] Surveying the field of uses to which the notion of transference is now put, it is clear that this signifier has *itself* been subject to the kinds of shifts for which Stewart's theory of transference was designed to account, and it would be to misunderstand the very import of Stewart's theory to assume the existence of something common to all of these uses, simply because they share this name. However, there is something common to *some* of these uses, we contend, a common structure; this structure – the structure of transference – as we account for it, is what constitutes a central tool in our approach to the analysis of discourse. We give an

199 Stewart, *Philosophical Essays.*
200 These connections are traced in Burgoyne, "What Causes Structure".

account of this structure below, after a short survey of the contexts in which this structure is to be discerned.

The transference of a name

In his essay on the beautiful, opposing his theory to the assumption, to be found in the *Enclopedie* entry, *Beau*, that there must be a property in common to all objects that share the name, "beautiful", Stewart instead proposes the following, more modest condition:

> I shall begin by supposing that the letters A, B, C, D, E, denote a series of objects; that A possesses some one quality in common with B, B a quality in common with C, C a quality in common with D, D a quality in common with E; – while, at the same time, no quality is to be found which belongs in common to any *three* objects in the series. Is it not conceivable that the affinity between A and B may produce a transference of the name of the first to the second, and that, in consequence of the other affinities which connect the remaining objects together, the same name may pass in succession from B to C, from C to D; and from D to E? In this manner, a common appellation will arise between A and E, although the two objects may in their nature and properties be so widely distant from each other, that no stretch of the imagination can conceive how the thoughts were led from the former to the latter.[201]

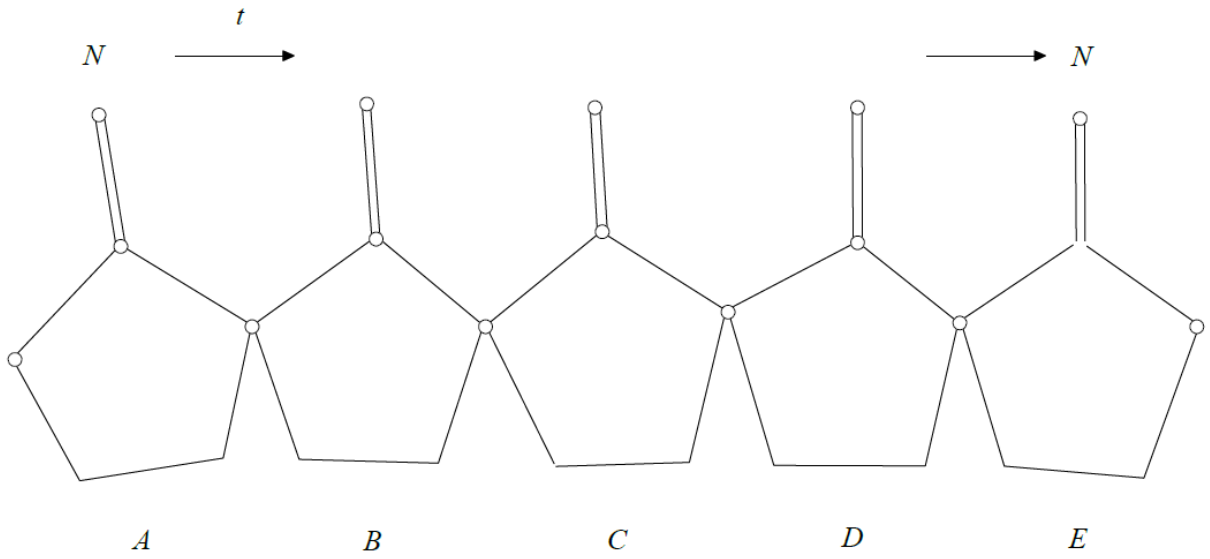

Fig. 3.1 showing the transference (t) of a name (N) from objects, A to E, on the basis of "local" connections.

These "distant" applications are possible because "Stewart's law" – the law that governs the "transference of the name" from one object to another – is not that, in order for a name to be transferred to some new object, this object must have some one thing in common with *all* objects that share that name, with that quality constituting the condition for the transfer of that name, but

201Stewart, Philosophical *Essays*, 217.

merely that it have some property in common with *one* other object that shares that name; one, in other words, is enough. As a consequence of this more restricted version of the law stipulating a quality in common, there is no guarantee that the quality in common allowing the transference of the same name will always be the *same quality*, hence the difficulty encountered by the imagination in attempting to make sense of such shifts.

Transference and the signifier

Stewart's account of meaning shifts forms the basis of the definition of the signifier offered by the psychoanalyst, Bernard Burgoyne, which we use in this thesis. A signifier is, he says:

> ...a phrase or fragment of a phrase to which is connected a class of meanings which are themselves attached to each other by laws of shifts of meaning.[202]

In set theory, the notion of a *class* was developed as a means to constitute collections of elements on the basis of an arbitrary condition for membership, without thereby invoking Russell's paradox.[203] One can thus refer to a class of green cars, warm climates, and so on. However, if, as Stewart suggests in his theory on the laws governing shifts of meaning, there is no necessity of a property common to all objects that share a name, in what sense do they constitute such a class, what would constitute its condition for membership? The answer must be that all objects that share a name have in common *their having something in common with at least one other member of that class.* In this sense, the "quality in common" – the "being the same" at the level of some contingent property – between a point and one other point of the class, itself constitutes the "common property", which then constitutes the condition for class inclusion.

Thus, a *signifier* – a phrase or collection of phrases – can change meaning, can establish connections to new meanings, insofar as something in common exists between one meaning and another to which a signifier is now to be transferred, without it being necessary that a single quality in common grounds *all* of the shifts constituting as a class the meanings connected to that particular signifier. Meanings, in this conception, thus form what could be called a *transference class*;[204] rather than a particular property in common, as the Encyclopedists assumed, the condition for membership of such a class, the property all members of that class have in common, is an experience of partial[205] commonality with respect to at least one other member of that class, with one enough to satisfy condition for inclusion in that class.

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202 Burgoyne, *Topology: Secrets of Space.*

203 Russell's paradox or "antinomy" is the following one; if conditions are arbitrary – if, in other words, anything can constitute the condition for membership of a set – this must include the following condition; the members of a set *X* are all those sets that do not contain themselves as members. This generates the paradox to which Russell refers, for if *X* is a member of itself, it is, according to the condition that constitutes the set, excluded from membership, but if it is so excluded, then, according to the same constituting condition, it must also be included – it must also be a member of itself. This paradox disappears, however, if a *class* is distinguished from a *set*, as a class, *X*, of all sets that do not contain themselves as members does not implicate *X* (as *X* is now a class and not a set).

204 The notion of a *transference class* is ours and not Burgoyne's.

205 We use "partial" here in the sense implied by Freud's "partial identification". The upcoming section on Freudian identification offers an explanation of this.

Freudian transference

In the postscript to Freud's account of his analysis of a young woman referred to as Dora, given in the "Fragment of an Analysis of a Case of Hysteria", Freud characterises transference in terms of a metaphor of printing; transferences, he says, are *facsimiles*, *new editions*, of the impulses and phantasies aroused during, and made conscious by, the progress of the treatment. Sometimes these transferences have a content which differs in no way from the original model, except with respect to this substitution, in which case they can be considered "new impressions" or "reprints", and, at other times, these contents have been subjected to a moderating influence, which he terms, "sublimation". In this instance, they will no longer be new impressions, near facsimiles of some past constellation on which they are modelled, but "revised editions".[206] These transferences have a peculiarity, Freud says, which is that they replace some earlier person by the person of the analyst; a whole series of psychic experiences are revived not as belonging to the past, but as applying to the person of the analyst in the present.[207] When, in a dream she recounts, Dora gives herself the warning that she had better leave the treatment, just as she had formerly left Herr K's house, Freud berates himself for not having detected a significant shift in their relations, a *transference* from Herr K – a key figure in Dora's erotic impasses – to himself. Have you noticed, he could have asked, anything that leads you to suspect me of intentions similar to those of Herr K, or have you been struck by anything about me which has caught your fancy, as happened previously with Herr K? Then her attention would have been turned to some "detail" of their relation, or in his person or circumstances, under which would be hidden something "analogous" concerning Herr K. It was because of this something in common – what he calls an "unknown quantity" – that she had transferred her cruel impulses, her revengeful motives, from Herr K onto Freud, "acting out" a vengeful desertion of the treatment in place of a revenge against Herr K for his desertion of her.[208]

Freudian identification

In the *Group Psychology* from 1921, Freud distinguished between two kinds of "emotional tie" constituting the unity of the group – on the one hand, *love*, which binds each of the members of the group to the leader, and *identification*, binding them one to the other. These two forms of tie, of emotional bond, can, he says, be characterised in terms of *having* and *being*; if, in the case of love, the love object is one we would like to *have*, in the case of identification, the object of the identification is someone we would like to *be.*[209] Suppose that a little girl, says Freud, develops the same painful symptom as her mother – for instance, the same tormenting cough. If this identification comes from the Oedipus complex, he says, it signifies a hostile desire on the girl's part to take her mother's place with respect to the father, producing a realisation of this desire under the influence of a sense of guilt; "You wanted to be your mother, and now you *are*, anyhow so far as your suffering is concerned".[210] In this case, says Freud, the identification is "partial" and "extremely limited"; it pertains not to the whole of an object, taking the whole as its model, but,

206 Freud, "A Case of Hysteria", 116.
207 "A Case of Hysteria", 116.
208 "A Case of Hysteria", 118 -119.
209 Freud, "Group Psychology", 106.
210 "Group Psychology", 106.

rather, borrows from the other only a single trait [einziger Zug].[211] A "partial identification" in other words, is "partial" not because it has only some of the properties of a relation of identification; it is "fully" a relation of identification – rather the "partiality" is on the side of the object; a partial identification is partial because it relates only the *part*, rather than the whole, of an object to the part of another object. Of the relations that relate two objects, we could say, only some of these relations are relations of identity – of being "the same".

Transference as completion

In *The Meaning of Meaning*, the text written by I. A. Richards in collaboration with C. K. Ogden, the authors attempted to delineate a new, general theory of meaning and reference, based, in part, on the theories of signs developed by C. S. Peirce. Whilst we do not intend to adopt the general approach they offer in this text, it does contain within it a nascent theory of what they call *expectation*, proposed some twenty years before the publication of Meyer's *Emotion and Meaning in Music*, and related directly to the notion of transference we have been developing.[212]

A "context", say Richards and Ogden, "is a set of entities (things or events) related in a certain way" – and this "set" – what they call a *context* – is recurrent; each of its elements have a character (being a particular kind of thing, rather than another) such that other sets of entities occur having the same character and related by the same relation, with these recurrences approaching identity; they occur "nearly uniformly".[213] The existence of such recurrent contexts forms the basis of expectation, for the recurrent quality of contexts is such that the recurrence of merely a part is sufficient to call up the whole, the rest of the context to which this part is connected and which thereby constitutes its "completion". In the somewhat archaic terms Ogden and Richards used at the time, borrowing from the vocabulary of contemporary psychology:

> The expectation is the excitation of part of an engram complex which is called up by a stimulus similar to a part only of the original stimulus situation.[214]

This is related to the question of what they call "interpretation", for a peculiarity of interpretation, they say, is that when a context has affected us in the past, the recurrence of merely a part of that context – what they propose to call a "sign" – will cause us to react in the way we reacted before; "a sign is always a stimulus similar to some part of the original stimulus and sufficient to call up the engram formed by that stimulus";[215] as such, a part is a "sign" of the whole.

Leaving aside the question of signs, it is thus possible to see that what Richards calls "expectation" – the process in which the whole of a context is expected to recur, "completing" the appearance of just a part – has the structure of a *transference*; what Richards calls "completion" is, in other words, the transfer to a present element, x', of those contextual elements, A, to which a past element, x, is connected, contingent on the experience of a "similarity", a "partial identification", between x and

211 "Group Psychology", 107.
212 I could find no mention of Ogden and Richards' text in Meyer's *Emotion and Meaning in Music.*
213 Ogden and Richards, *The Meaning of Meaning*, 58.
214 *The Meaning of Meaning*, 52.
215 *The Meaning of Meaning*, 53.

x' – the stimulus is *similar* to a "part only" of the original situation. *Fig. 3.2* shows the "transference (t) of a context", A, from x to x', contingent on the "partial identity" (similarity, represented by the equivalence, ~, of the parts) of x and x'.

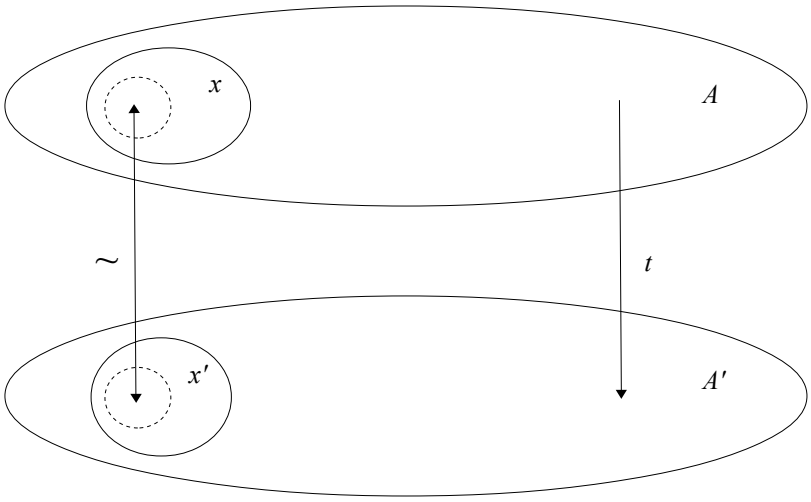


fig. 3.2

Transference – a general structure

Given these coordinates, for each of the instances of transference given above, we propose the following, general structure; transference – the transfer of some element x – is contingent on a "partial commonality" – the experience of some thing, a certain element or "quality", in Stewart's terms, in common between one element, y, to which x is already connected, and another element, z, to which x is to be transferred. That the existence of such a "partial commonality", an element, a "quality in common", is the condition for a transference is what we will call "Stewart's law"; Stewart's law states that simply that there can be a transference if there is somewhere to be found a common quality between the elements from and to which another element is to be transferred. In the case of Stewartian transference, the "transfer of a name" from one "object", A, to another "object", B, is contingent on the experience of a quality in common between these objects A and B; in the case of Freudian transference, the transfer of hostilities, of "cruel impulses", from Herr K to Freud, is contingent on some "similarity" – what Freud calls an "unknown quantity" – linking, for Dora, Herr K to Freud; and, in the case of the little girl who identifies with her mother by means of a tormenting cough, we could say, this partial identification – the "single trait" – is the condition of two transferences – both the fantasised transfer of the relation that constitutes her mother's place with respect to the object of her love, her father, as well as the Stewartian "transference of a name", represented here, perhaps, by the signifier, "mother" – now she is "mother", we could say, at least insofar as her suffering is concerned. In the case of "completion" offered by Ogden and Richards, completion – the "transference of the context" – is contingent on a similarity – a partial identity – between some point, x, and a past point, x', contained in that context.

Analogous transferences

However, there is one final thing to say about transference before we conclude this elaboration, and this has to do with something Stewart says at the end of his discussion of what he calls "transitive applications", governed as they are by what we have called "Stewart's law". Although by far the greater part of the transitive or derivative applications of words depend on casual and unaccountable caprices of the feelings or of the fancy, he says, there are certain cases in which they open very interesting field of philosophical speculation. We will quote the passage that follows in full:

> Such are those, in which an analogous transference of the corresponding term may be remarked universally or very generally in other languages, and which, of course, the uniformity of the result must be ascribed to the essential principles of the human frame. Even in such cases, however, it will by no means be always found, on examination, that the various applications of the same term have arisen from any common quality, or qualities, in the objects to which they relate. In the greater number of instances, they may be traced to some natural and universal association of ideas, founded in the common condition of the human race; and an attempt to investigate by what particular process this uniform result has been brought about, on so great a variety of occasions, whilst it has no tendency to involve us in the abstraction of the schools, can scarcely fail to throw some new light on the history of the human mind.[216]

"Some natural and universal association of ideas, founded in the common condition of the human race..." This passage has had a profound effect on the way we have approached Ornette's speech. For, if the notion of transferential shifts is a key tool in our analysis of Ornette's discourse – if our "discourse analysis" is, at least in part, a tracking of transferences, as well as the consequences these transferences imply for an understanding of Ornette's music – there are points at which we have discovered in completely other fields (rather than languages, as Stewart suggests), with which Ornette may not have been at all acquainted, correlative shifts, correlative transferences, and at these points, we have let our discussion switch to these analogous trajectories in the development of a term. We are thinking, for instance, of the notion of "freedom" in relation to *vectors*, which we discuss in chapter VI, as well as the initial development of the notion of vectors in the work of William Rowan Hamilton, which we discuss in chapter V.

General reflections on transference

With the notion of transference in place, we note some specific, perhaps easily overlooked points;

- To say that transferential shifts are governed by laws – by "Stewart's law" – is not to say, of course, that shifts that do not obey this law cannot happen – on the contrary, such startling and perplexing shifts are a key aspect of, for instance, the poetic strategies of, say, the Surrealists. Rather, to suggest that shifts are law-governed is merely to say that Stewart's law constitutes *the condition for an experience of lawfulness* – shifts that are experienced as not

216 Stewart, *Philosophical Essays*, 226.

obeying this law, in other words, can happen but will simply be experienced as “unlawful”.

- From the perspective of Stewart's law governing transferential shifts, which element satisfies the condition for transference, which element constitutes the “common quality” is, in some sense, *a matter of indifference*; there is nothing in “Stewart's law” to distinguish one quality in common from any other, a “proper” commonality from one that is “improper”; it states only that there must be one.

- However, that the specific nature of the element in common is a matter of indifference from the perspective of Stewart's law, does not mean that the specific character of this element will be without significance in the context of some specific transference. On the contrary, this thesis is, in a sense, an investigation of the effects – of veiling, of direction – that emerge when the element in common satisfying Stewart's law is a *relation*, with the shift from points to relations and back again characterising its movement and structure.[217]

Why transference?

Transference is a central discourse-analytical tool in this thesis, constituting, as it does, a structuring function with respect to discourse. As such, it forms part of the attention to structure that Parker's Lacanian Discourse Analysis proposes. However, insofar as it is drawn from the philosophers of the Scottish Enlightenment, rather than from Saussure and the work of the Continental structuralists, it does constitute a point of divergence with respect to Parker's work – a divergence, nonetheless, that Parker's commitment to methodological plurality would seem to encourage. Another reason for the use of the notion of transference is that the tracking of transferential shifts in Ornette's discourse overlaps with another of our tools – the search for “quilting points” – signifiers that function as points of convergence, of intersection (introduced earlier) – in Ornette's texts. In other words, those signifiers dominant in Ornette's discourse *seem to be those that have been subject to some significant shift at the level of meaning*, for which the notion of a transferential shift allows us to account – we are thinking here of the signifiers, *tonic*, *free*, *interval*, *movement*, *unison.* These, key signifiers in Ornette's universe are then the points around which our chapters our oriented.

Whilst there are significant overlaps with approaches based on “conceptual metaphor”, as well as with more recent work on analogy, (reviewed in detail in the previous chapter), it is our contention, as stated before, that transference is the more general term, capable of incorporating the key aspects of theories of metaphor and analogy, whilst allowing us to remain alert to meaning shifts with

217 In this respect, it is important to note that, in each of the cases of Freudian identification we have discussed, the specific identification, the specific element binding one to another, is taken by Freud to be a kind of stand-in, a substitution or displacement from some, much more significant point of coincidence; in the case of the little girl, the identification – the symptomatic cough – is the mark, thinks Freud, of a (desired) coincidence of position with respect to the father; in the case of Dora's identification of Freud and Herr K by means of some unknown similarity, Freud refers to something “concealed”, “analogous” and “immeasurably more important” in his relation for her to Herr K – a reference to “analogy” that echoes Freud's discussion in the *Group Psychology* of the outbreak of hysterical fits in a girls' school; the symptomatic identification – the fit – is an identification constructed on a “significant analogy” with another – the openness, in this case of disappointed love, to a similar emotion. (*Group Psychology*, 107). In relation to this “displacement”, Freud refers here to “repression” – a very interesting and important extension of our themes, beyond the scope of this thesis.

which these rhetorical devices share a structure, but which are missed by broader metaphor theory. In addition, the notion of transference as it is articulated in the Scottish Enlightenment, Freud and elsewhere, enables us to develop a broader theory of meaning shifts at a distance from the attachment to the body as a privileged term. Transference, as articulated in Stewart's work, is, in a sense, indifferent to the terms it relates – it is, at least in some respects, simply a "technical" law, governing *how*, not *what*, two things are related. Finally, and crucially, an attention to transference enables us to link an analysis of discourse, on the one hand, to psychoanalysis, on the other, in a way distinct from the Saussurean emphasis in Lacan's work. The attention to points of intersection, to "qualities in common", in particular, enables us to link an analysis of discourse to psychoanalytic features such as ideals, identity, identification and transference, as well as to key features of musical space, in particular the question of musical unity.

4. General Topology

Topology studies properties of spaces that are invariant under any continuous deformation, with such invariance implying topological equivalence. Thus, for instance, a square is topologically equivalent to a circle to the extent that a square can be deformed continuously – without tears or breaks – into a circle, and vice versa.[218] The roots of contemporary topology lie in the intellectual strands emerging in the 19th century that gave rise to the related fields of *algebraic* and *general topology*, though precedents for a topological approach can be found in the work of Leonhard Euler, in particular Euler's development of the "Euler characteristic"[219] – a result invariant across certain objects in geometrical space – as well as in Euler's solution in 1735 to the Seven Bridges of Konigsberg problem – to the problem of how to traverse all of the bridges of Konigsberg in a single trip, without doubling back.[220] Algebraic topology, which seeks an algebraic classification of topological spaces, developed from Riemann's work on complex numbers,[221] as well as from the work of Möbius and Klein, with Möbius' example the famous "Möbius strip" formed by glueing together the ends of a half-twisted rectangular strip. Poincare, meanwhile, introduced new possibilities for the use of algebra in topology, including homologies, homotopies and fundamental groups.[222] General topology, on the other hand, developed from Cantor and Borel's work on set theory, with Cantor proposing the important concept of a set of limit points.[223] Frechet proposed axioms for convergence in an abstract set, as well as the notion of a metric space,[224] and in 1914, Felix Hausdorff proposed four neighbourhood axioms by means of which a non-metric topological space may be defined, as well as the relation between metric, limit and neighbourhood approaches to the conception of general spaces.[225]

In this thesis, we use a number of general topological notions – *space*, *neighbourhoods*, *interior*,

218 For a brief introduction to the history of topology, see Borisovich et al. *Introduction to Topology*, 11-13.
219 Euler, "Elementa doctrinae solidorum".
220 Euler, "Solutio problematis ad geometriam situs pertinentis".
221 Riemann, "Grundlagen für eine allgemeine Theorie der Functionen".
222 Poincare, *Analysis Situs.*
223 Cantor, "Über die Ausdehnung eines Satzes aus der Theorie der trigonometrischen" . For the development of the related notion of open set, see Moore, "The emergence of open sets, closed sets, and limit points in analysis and topology".
224 Fréchet, Maurice. "Sur quelques points du Calcul fonctionnel".
225 Hausdorff, *Mengenlehre.*

exterior and *boundary* – with particular attention to the work of both Felix Hausdorff, though some other aspects of topology will be drawn in and explained in later chapters. Our concern here is to present the main tools in a straightforward way, starting with an account of metric spaces, as well as neighbourhoods, interiors, exteriors and boundaries as defined in them, before moving onto spaces that are not metric spaces (spaces in which distance cannot be defined). We then discuss some other particular features of spaces, and operations on those spaces. We will start, however, with a short discussion of *relations*, in the more formal, mathematical sense.

Relations

At one level, a relation can be defined as an association between, or property of, two or more objects; "$x = y$" or "a lies between b and c"; this is a relation defined in the more intuitive sense. However, a relation may also be specified by listing all of the instances for which a particular relation holds.[226] For example, a binary relation on the set A is defined as the set of all *ordered pairs* (x, y) for which "x has relation R to y" holds. In this sense, a relation may be defined as a subset R of the *Cartesian product* $A \times A$ (where the Cartesian product is all possible ordered pairs of points in A). Although the more and less formal uses of the signifier, "relation", imply one another, in the context of this thesis we most frequently use the signifier, "relation", in its *less* formal sense, to indicate that there are, for instance, two points, x and y, with some third term – a "relation" – between them – x "is the brother of" y, y "is the father of" x, and so on. A particularly important "relation", in this less formal sense, is the notion of a *vector*, or "directed distance", introduced in the context of chapter V. Where a relation is meant in a more formal sense, however, we will make this explicit.

Relations are important to this thesis for a number of reasons. First, there exist spaces where relations give character to the space – a *metric* or *distance function* on a set of points characterises a metric space, as suggested by Hausdorff (discussed in the the following pages), an *order relation* on a set of points characterises an ordered space, or a space with an *order topology*, and so on (though it is important to mention here a distinction between relations in this sense and what might be called *spatial relations*, which have to do with the particular interrelation of neighbourhoods defining a space, as we will see shortly in our discussion of Hausdorff's neighbourhood axioms). Second, *transposition* – a key signifier in Ornette's universe – implies a shift from points to relations; the consequences of which are at the heart of this thesis. And, third, relations imply *order* – a binary relation, for instance, implies a collection of ordered pairs, (x, y) – which is to say that relations imply a distinction between *antecedent* and *consequent*, *what leads* and *what follows*, with direct consequences for the question this thesis seeks to address. We will return to these themes as we move through the thesis.

Order

A set is ordered by assigning an order of preference to any two distinct elements a and b, a rule that states that, of any two distinct elements, a and b, that one precedes and the other *follows*, with no necessary implication of the space-like or time-like characteristics sometimes associated with the

226 Daintith and Nelson, *Dictionary of Mathematics*, 277-278

terms “before” and “after” (though such relations will sometimes be used to represent *temporal* order). An *ordered pair*, (a, b), is a grouping together of two elements in a definite order, where a is the first element and b is the second.

A relation is a *strict partial order* if it has the following properties:

1) *asymmetry* – for every x in A for which $x \neq y$, either $x\ R\ y$ or $y\ R\ x$
2) *non-reflexivity* – for no x in A does the relation $x\ R\ x$ hold
3) *transitivity* – if $x\ R\ y$ and $y\ R\ z$ then $x\ R\ z$.

A *non-strict* order, which does not satisfy 2), is represented by the inequality $\leq$. Where every element of the set is comparable (related by means of the relation) then a partially ordered set is called *totally ordered* or a *chain*.

Equivalence

An *equivalence relation* (such as “has the same biological mother as”) is a relation with the following properties:

a) *reflexivity* – for every x in A, $x\ R\ x$
b) *symmetry* – for all x, y in A, if $x\ R\ y$ then $y\ R\ x$
c) *transitivity* – for all x, y, z in A, if $x\ R\ y$ and $y\ R\ z$ then $x\ R\ z$

In other words, “has the same biological mother as”, is an equivalence relation because:

a) one has the same biological mother as oneself;
b) if John has the same biological mother as Jane, the inverse is also the case;
c) if John has the same biological mother as Jane, and Jane has the same biological mother as Harry, then John will also have the same biological mother as Harry.

An *equivalence class* is the set of elements, y, of a set A to which x is related by a given equivalence relation. Thus, John, Jane and Harry, in the example above, form an equivalence class on the basis of a shared biological mother.

We will offer further explanations of these relations in the main body of the thesis, where necessary to follow the argument being presented, though it is our priority to keep such formal presentations to a minimum.

Metric Space

A *metric space* can be defined as a set E in which any two elements (points) are assigned a real, non-negative number, their distance $\overline{xy} \geq 0$, with the requirement that three *distance axioms* pertain:

a) a *symmetry axiom* – $\overline{xy} = \overline{yx}$ (the distance between x and y is equal to the distance between y and x);

b) a *coincidence axiom* – $\overline{xy} = 0$ if, and only if, $x = y$ (0 is a distance value for spatially coincident pitches only); and

c) a *triangle axiom*, which stipulates that $\overline{xy} + \overline{yz} \leq \overline{xz}$ (that, in other words, $\overline{xy} + \overline{yz}$ is equal to $\overline{xz}$ when the angle of $\overline{yz}$ with respect to $\overline{xy}$ is 180 degrees, and less then $\overline{xz}$ when it is other than 180 degrees).[227]

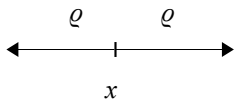
A *metric space* can be thought in terms of a *function* in the following way, says Hausdorff. With E as a set, whose elements are referred to as points, to each pair of points (x, y) is assigned a real number $\overline{xy}$, the distance between the two points that is a real function $\overline{xy} = f(x, y)$ defined in (E, E). ($\overline{xy}$ is the, now archaic, way Hausdorff represents the distance between points x and y). With a standard metric on a set of real numbers, distance is defined as the absolute value $| x - y |$ of the difference of the two numbers – the value, that is, of the difference of the two numbers without regard to "direction", to whether that value is positive or negative. (In this sense, +2 and -2 share an absolute value, 2.)[228]

Neighbourhoods

A neighbourhood in metric space can be defined thus (note that the German word used by Hausdorff for "neighbourhood" is *umgebungen*, hence the notation U_x):

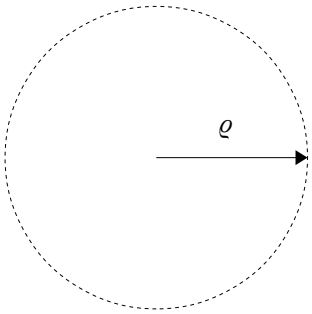
> In a metric space E, we understand an neighbourhood U_x of point x as the set of points y whose distance from x is less than a certain positive number, ϱ ($\overline{xy} < \varrho$)."[229]

Thus, says Hausdorff, on a straight line, U_x is a distance (not including the end points) with the center point x and the length 2ϱ.

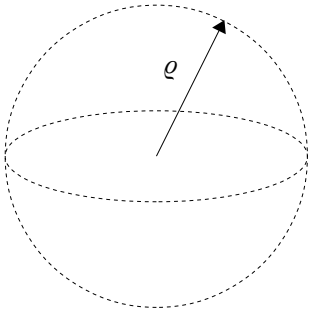


in a plane, U_x is the interior of a circle (not including its periphery) with the center x and the radius ϱ;

227 Hausdorff, *Set Theory*, 109.
228 *Set Theory*, 109.
229 Hausdorff, *Grundzüge der Mengenlehre*, 212.



in a 3-dimensional space , it is the inside of of a sphere.[230]



These "spherical neighbourhoods" [der sphärischen Umgebungen] in metric space, says Hausdorff, have a number of properties, which, by disregarding the distances that initially defined them, can now become the basis of four *neighbourhood axioms*, by means of which any topological space – whether that space be a metric space or not – can be defined. By a topological space, he says, we mean a set E, in which the elements (points) x are assigned certain subsets U_x, which we call neighbourhoods of x, according to the following neighbourhood axioms:

A) At least one neighborhood U_x corresponds to each point x; every neighborhood U_x contains the point x.

(B) If U_x, V_x are two neighborhoods of the same point x, then there is an neighborhood W_x that is a subset of both ($W_x \leq \mathbf{D}(U_x, V_x)$)

(C) If the point y is in Ux, then there is a neighborhood U_y, which is a subset of U_x ($U_y \leq U_x$).

(D) For two different points x, y there are two neighborhoods U_x, U_y without a common point ($\mathbf{D}(U_x, U_y) = 0$).[231]

230 *Grundzüge der Mengenlehre*, 213.
231 *Grundzüge der Mengenlehre*, 213.

In the third edition of his text on set theory, Hausdorff makes a distinction between *neighbourhood* and *separation* axioms; the first three axioms from the earlier text are given as neighbourhood axioms, and the fourth is included in a distinct group of *separation axioms*, the latter no longer considered necessary for the constitution of a topological space, instead offering the means to distinguish the separation properties of one topological space from another. These separation properties are now characterised as progressively stronger T-n levels, named after the German word for separation, *Trennung*, with spaces with separation strength T2 known as a Hausdorff space.[232]

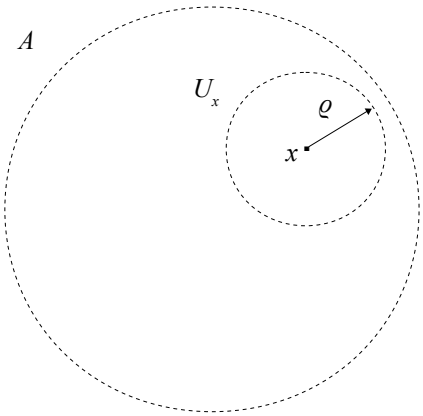
The validity of his topological axioms are not limited to"spherical neighbourhoods" in metric space, says Hausdorff; he gives the example of an open, ordered set E; a neighbourhood of x is any "intermediate range" ("Mittelstrecke") ${E_a}^b$ containing the element, x. That is, for $a < x < b$ the set of elements, y, for which $a < y < b$."[233] Whilst distance cannot generally be defined, these neighbourhoods, Hausdorff says, nonetheless meet his neighbourhood axioms.[234]

Interior and Border Points

Hausdorff defines the *interior* and *border points* of a point set A thus:

> Let A be a point set. If a point x is such that there exists a neighbourhood $U_x \leq A$, then it is called an *interior point*, otherwise it is called a *border point* of A.[235]

Where A is a circular disk in $\mathbf{R}^2$ (as shown), x is an *interior point* of that space when, we could say, it is possible to move some distance in all directions from x without thereby reaching the perimeter. This radial distance ϱ is then sufficient to constitute a "spherical neighbourhood" U_x of x that is wholly contained in A ($U_x \leq A$).



232 Burgoyne, "Autism and Topology", 208-210.

233 *Grundzüge der Mengenlehre*, 214.

234 "Wir werden uns später mehrfach überzeugen, daß die Gültigkeit der Umgebungsaxiome keineswegs ein Privileg der sphärischen Umgebungen ist. Hier genüge ein Beispiel, das zugleich zeigt, wie man die geordneten Mengen nach demselben Formalismus wie die Punktmengen behandeln kann: ist E eine geordnete, der Einfachheit wegen offene Menge (d. h. ohne erstes und letztes Element), so verstehe man unter einer Umgebung von x jede das Element x enthaltende Mittelstrecke ${E^b}_a$ d. h. für $a < x < b$ die Menge der Elemente y, für die $a < y < b$. Diese Umgebungen erfüllen unsere Axiome, während sich Entfernungen im allgemeinen nicht definieren lassen."

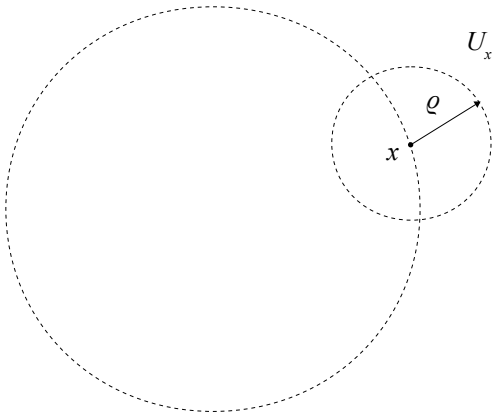
235 Hausdorff, *Set Theory*, 127.

The set of interior points of A is called the *interior* of A; the set of border points of A is called the *border* of A. *Open* and *border sets* are defined in terms of interior and border, such that a set that consists entirely of of interior points is called an *open set* (this is equivalent to saying that the union of open sets is itself an open set). A set that consists entirely of border points is called a *border set.*[236]

Hausdorff then defines the *boundary* or *frontier* of a space as the union of the *border* of set *A* and of its complement *B*, where the *interior* of *B* is the *exterior* of *A* and vice versa;

> Let *B* be the complement of *A*: $E = A + B$. The interior points of *B* are also called the *exterior* points of *A*, and conversely. The union of the border of sets yields the *boundary*, or *frontier*, of *A* and of *B*.
>
> $$A_f = A_b + B_b = B_f$$[237]

A *boundary point* can thus be defined as a point *x* all of whose neighbourhoods contain points of both the interior and exterior of A; there exists no neighbourhoods, that is, wholly contained in *A* or wholly disjoint from *A* (and therefore contained on the interior of its complement, *B*).



Why general topology?

The possibility of a spatial approach is implied by the answer Ornette gave to the specific questions at the heart of this thesis, of *going where I go* and *of knowing where to go*; if "no one knew where to go or what to do to show that he knew where he was going", Ornette's answer refers directly to *space*, and in particular to the performance of a shared space. What we also find everywhere in Ornette's discourse, however, are relations to fields other than music, but whose importance for an understanding of his music seem to be, for Ornette, real and clear, relations can be situated at the

236 Hausdorff, *Set Theory*, 127.
237 *Set Theory*, 129-130.

level of topological structure.

There now exist some topological approaches to music – chiefly the use of topos theory[238], and more recently algebraic topology.[239] The generality offered by any form of topology is an improvement on the more narrow existing approaches (set theory, transformation theory, Neo-Riemannian theories, geometry); however, the technical aspect of these algebraic topology and topos theory is prohibitively abstract for a general reader, and the danger is thus that some of the concrete relevance of what is being developed is lost. Neighbourhood topology – with its attention to interiors, boundaries, neighbourhoods – allows a more concrete relation to what is being developed mathematically, for these are notions to hand in everyday speech. The choice between general topology, algebraic topology and topos theory is to an extent one of preference, however, insofar as discoveries expressed in terms of, for instance, algebraic topology, will have direct equivalents in general topology.

5. Conclusion

What distinguishes our approach is the particular answer our tools allow us to offer to a central problem of analysis, the sense that analysis is in danger of producing its object, that what is heard is an effect of the hearing, not simply the neutral reception of something immanent to the sounds themselves. Rather than seek out some impossible neutrality, we develop a form of psychoanalytically-informed discourse analysis – a way of listening to Ornette's spoken discourse – that is a kind of *listening for listening*, an approach that aims to discern in and between the lines of Ornette's speech the implication of new ways to listen, new ways to experience Ornette's music as movement and space. If this would seem to make of the author an authority, we instead put the accent on the author's speech, which, in its twists and distortions, then constitutes an authority beyond any authorial intention regarding that speech.

Whilst precedents for a psychoanalytic approach exist, ours distinguishes itself by avoiding, first, a relation to psychoanalysis that is explanatory – using psychoanalytic notions to "explain" the music – and, second, where tools are developed from psychoanalytic technique, the temptation to simply "apply" these tools to what is heard with insufficient attention to the way that psychoanalysis problematises the question of listening itself. What we want from psychoanalysis above all, in other words, is its *ear*, its particular way of attending to speech, which, for us, then implies new ways of listening, of attending, to music. And if precedents also exist for the notion of transference, in, for instance, the study of metaphor, our approach distinguishes itself, first, by its breadth, including meaning shifts more subtle than those considered by metaphor theory, and, second, by situating the notion of transference within a broader discourse analysis informed by psychoanalysis, in which the tracing of shifts at the level of meaning plays a pivotal role.

238 Mazzola, *Music and Topos.*
239 Tymoczko, "Why Topology?"

IV. Approach

1. Introduction

Rather than assuming that a "direct" approach to Ornette's music is possible, with pertinent features immanent to it and accessible to a sufficiently sensitive analyst, we seek a singularly Ornettian conception of the space of Ornette's music, and movement through that space, by interposing between analysis and text a psychoanalytically-informed analysis of Ornette's speech. This analysis then forms the basis of our analytic approach to Ornette's music. From a psychoanalytically-informed discourse analysis we draw the notion of a *quilting point*, *retroaction*, discourse as *discourse of the other*, an *attention to structure* and the importance of *deadlocks of perspective*, to which we have introduced the notion of *transference*. Our analysis then gives particular attention to *relations*, as implied by Ornette's speech, and the particular *spatial* character they imply. In this chapter, we offer an account of 1) how each of these tools is to be used, both in the individual chapters and in the thesis as a whole 2) an account of the relationship between the different tools chosen, and 3) how all of the tools work together in a way that is both consistent and complementary. We start with a short account of how we use those elements drawn from a Lacanian Discourse Analysis, as proposed by Ian Parker.

2. Lacanian Discourse Analysis

Discourse as discourse of the Other

This thesis pays close attention to Ornette's discourse – to the structured set of signifiers that make up his work – not in order to make the *speaker* an authority with respect to the things of which he speaks, but rather the *speech*, a speech that may say something other than its speaker intended it to say, a speech whose gaps and inconsistencies may themselves say something, with respect to which which an analyst may then have something to say. What is said then becomes the basis for the development of analytical tools with which to approach the music. This is one sense in which we pay attention to Ornette's discourse as a "discourse of the Other". For example, we pay close attention to the definition of an "interval" Ornette offers in the interview to Gunther Schuller[240] in 1960 – "a pitch that carries an idea" – treating it not as a simple error or misunderstanding, mistakenly deviating from the "correct" sense of a "gap" or "distance" *between* pitches, but rather as a formation that, in this deviation from the expected sense, as well as in the tensions it manifests internal to itself, implies something about an experience of sounds and their relation, and what this may have to do, perhaps, with relations beyond the field of music.

Deadlocks of perspective

We do not attempt to draw the whole of Ornette's discourse into a single, unified statement. Rather, beginning with fragments from Ornette's speech about his work – phrases, short passages, single expressions – we think through the consequences of their immediate articulation for musical analysis. With particular music-analytical tools then developed from an analysis of Ornette's speech,

240 Coleman, interviewed by Schuller.

we turn to Ornette's music, with attention first to the specific music to which such speech initially refers; Ornette's music now appears with a particular Ornettian spatial structure and character, and resonates in the wider space of concerns that constitute Ornette's own work and thought. If such fragments imply consequences first for the specific music to which they refer, it is nonetheless possible to think through their consequences for other Ornettian contexts. Here we are not attempting to provide an analytic key to the whole, derived from one of its parts, but, by transferring the thought articulated in a part of Ornette's discourse to other spaces, to think *with* Ornette, even if to think with him is to think his thought to a point Ornette has not yet transferred it. This approach, which begins with fragments, attempting to think through consequences as constituted on the basis of their own terms, thus allows tensions and disjunctions to form and manifest, both between fragments taken from different aspects of Ornette's discourse, as well as internal to the fragments themselves, insofar as any fragment is itself a relation of fragments. Rather than a problem to be dissolved or concealed, however, these tensions then become the spark for new consequences, which can themselves be transferred to new contexts and relations. In a sense, then, our mode of "discourse analysis", rather than an approach that seeks to "catch Ornette out", drawing attention to the points at which it is inconsistent, or at which it somehow fails, simply proposes to *take Ornette at his word*, avoiding the impulse to minimise the tensions and difficulties at the level of the specific articulations he offers in service of a deeper, unifying meaning. This allows a much richer and more interesting discourse to emerge, the gaps and inconsistencies of which manifest, in a sense, a kind of knowledge that goes beyond what is conscious.

Attention to structure

Whilst there are many consonances with an approach to structure founded on the Saussurean distinction between the syntagmatic and paradigmatic axes, reread by Jakobson in terms of metaphor and metonymy, and then by Lacan in terms of the Freudian distinction between condensation and displacement, one of the main consequences of the shift away from the Continent is that *structure* – the particular mechanisms structuring a language, and, in psychoanalytic terms, the unconscious – is now to be thought, in part, in terms of *transference*, as described by Stewart, and taken up by subsequent philosophers and mathematicians, as well as Freud himself. "Attention to structure" thus emerges with a Scottish Enlightenment orientation. However, both quilting and retroaction imply structures, as do the particular laws and properties that pertain to forms of relation and space. In this sense, an "attention to structure" implies a much broader approach, characterised by an attention to all these different forms of structure, as well as to their relation, with an attention to transferential shifts in meaning at the level of Ornette's speech, for instance, as we have stated before, overlapping with an attention to points of quilting. Key, orienting signifiers in Ornette's speech seem, in other words, to overlap with signifiers, such as "tonic", "free", "interval", "movement", "unison", that have been subject to some significant transferential shift at the level of their meaning.

*Quilting point*s

When Lacan introduces the notion of a *point de capiton*, or "quilting point", in his seminar from 1955 – 1956 on the psychoses, it is in the context of a discussion of the function of the signifier,

and, in particular, the function of the signifier, "fear", in *Athaliah*, a play by the 17th century French dramatist, Racine. What the intervention in the text of this signifier effects, he says, is "a transformation of the situation no accumulation or superimposition or summation of meanings can explain".[241] Rather, "it is the signifier that dominates the thing, since as far as the meanings are concerned they have completely changed".[242] Lacan refers to this signifier, which he calls a *point de capiton*, as a "spatialising device".[243] Were we to analyse the scene as a musical score, he says, we would see that it is "the point at which the signifier and signified are knotted together". "Everything radiates out from and is organised around this signifier, similar to those little lines of force that an upholstery button forms on the surface of a material. It's the point of convergence that enables everything that happens in the discourse to be situated retroactively and retrospectively".[244] Lacan's notion of a "quilting point" thus implies a number of key features;

- it performs a *situating function*;
- the effects of situation it produces emerge *retroactively*;
- it constitutes a *point of convergence*, insofar as everything "radiates out from and is organised around this signifier";
- it is a *spatialising device*.

If effects of situation emerge retroactively, however, this implies a "radial" action that is *in* rather than *out* – that, in other words, the relations implied by the lines on Lacan's upholstery have the quilting point as their *end*, rather than initial, point – an action which is then inverted in "retroaction". And, if the point of quilting is a point of convergence, this is to say that it is a *point of intersection*; all relations relating all other point of a text to the quilting point *intersect at this point*, with the retroactive effects of situation thus emerging *as effects of a relation to a common point*. Particularly insofar as it relates to the question of space and of what holds a space together, of what constitutes its *unity*, we place a particular accent on this *convergent* aspect of the quilting point, which might be in danger of being underplayed in favour of its punctuating, retroactive aspect.

When Arnold Schoenberg turns to the notion of a "motive" in his *Fundamentals of Musical Composition*, he conceives of it as just such a common point of convergence – as a point with respect to which almost every other point of a piece has a relation. He conceives this relation in specifically mathematical terms, as that of a "smallest common multiple", insofar as it contains elements of every figure that follows, and, to the extent that it is also contained in every figure that follows, that of a "greatest common factor".

> Inasmuch as almost every figure within a piece reveals some relationship to it, the basic motive is often considered the "germ" of the idea. Since it includes elements of at least every subsequent musical figure, one could consider it the "smallest common multiple". And since it is included in every subsequent figure, it would be considered the "greatest common

241 Lacan, *The Psychoses*, 267
242 *The Psychoses,* 267
243 *The Psychoses,* 267
244 *The Psychoses,* 268

factor".[245]

A "motive", conceived in Schoenberg's terms, thus performs a "quilting function"; like Lacan's upholstery button, around which everything is organised, the motive is a both a point of convergence – the point to which everything is in some kind of relation, to which, like the lines Lacan discovers on the surface of a material, those relations converge – as well as a point of unity, of coherence, holding – "knotting" – a space together. Though, "perhaps unconsciously", even the writing of simple phrases involves the invention and use of motives, says Schoenberg, their function, when "consciously used", is to "produce unity, relationship, coherence, logic, comprehensibility and fluency"; their function, in other words, is to produce *unity* and *sense*; the motive is what holds a piece together, as well as what makes it possible to make sense of, and identify the prevailing logic in, those shifts that constitute development in a piece of music.[246]

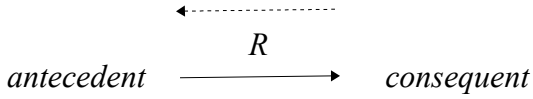
However, if a "quilting point" is a "point of convergence", it is possible to see quilting functions at work in many aspects of music – in, for instance, the convergence of the points of a key to a tonic, or of a chord to its root, or of the durations of a piece to a metrical duration. In each case, the tonic, the root, the metrical duration, insofar as they constitute a point of convergence, of intersection, perform a quilting function. If this is the case, however, this would imply a distinction between quilting points – points of intersection – that are "internal" and those that are "external". In the case of an *internal* point of intersection, the quilting function is performed by a point internal to the points – some "quality" or "property" of the points themselves, which constitutes a point of intersection insofar as it is something they have in common. Schoenberg's "motive", to the extent that it implies internal elements common to all figures in a piece, is an instance of this kind of quilting point, as are Stewart's "qualities in common", which allow the transference of a name. In the case of an *external* point of intersection, the quilting function is performed by a point *external* to the points – some point that is not a "property" or "quality" of the points themselves, but to which they are nonetheless all related by a relation external to themselves. A tonic is an instance of an external quilting point, as we will see in chapter V, as is "fear", the signifier Lacan refers to as a quilting point in the passage we quoted.

Given this distinction, it is possible to see that the structure of transference, as we have defined it, entails the distinction between external and internal points of "quilting", internal and external points of intersection. In the case of the Stewartian transference of a name, there is a relation to an external point of intersection – the name two objects share – contingent on an internal point of intersection – the "quality in common" between them. In the case of Freudian transference, the external point of intersection – Dora's hostility – is contingent on an internal point of intersection – some "unknown quantity" in common between Herr K and Freud – and so on. In this sense, the two levels of quilting, of internal and external points of intersection, are related by means of "Stewart's law". "Stewart's law" states, effectively, that there can be an external point of intersection (a relation to a common "name" external to the "objects" named) only insofar as there can be found an internal point of intersection (an "internal" quality common to both objects named).

245 Schoenberg, *Fundamentals of Musical Composition*, 8.
246 *Fundamentals of Musical Composition*, 8.

Retroaction

If retroaction is often presented in temporal terms, the order that pertains to a particular relation would allow a generalisation of the notion of "retroaction" beyond the domain of temporal order; "retro" – "backwards" – "action" is now any action that inverts the order that pertains to a particular relation, *whether or not that order is the order that pertains to time*. As such, on the one hand, the past can now act "retroactively" on the present, insofar as this action inverts the order that pertains to a relation relating the present to the past, and, on the other, we can speak of "retroaction" with respect to relations where any necessary implications of time or temporal order are absent. In our account of retroaction, we put the accent on the question of *endpoints*, with a shift away from the assumption of temporal order entailing a correlative shift away from the assumption of temporal endpoints; endpoints are now to be thought in terms of relations, and, in particular, the relations of antecedence and consequence implied by the order that pertains to a relation. Thus, endpoints – which is to say, *consequents*, what *follows*, the consequent points in an ordered relation – "retroactively" constitute what *comes before* – their initial points or *antecedents*.



Of course, musicians did not have to wait for the work of Jacques Lacan for an account of the "retroactive" effect of what comes after on what comes before. Already in 1911, in his *Theory of Harmony*, Arnold Schoenberg, had, for instance, discerned the ordered nature of such effects in the emergence of tonal significations from the interrelation of an ordered set of chords. "If we set down one of these chords independently, taken out of its context", he says, "then we cannot determine whether it belongs to one key or another. It can just as well belong to [C major as to G major]". Rather, "which way it is to be reckoned" – it's particular tonal significance – "depends on what goes before and what comes after. A triad c-e-g can be I in C major or IV in G. The succeeding chords determine whether it is one or the other".[247] Whilst Schoenberg focusses on the interrelation of an ordered set of chords, it is clear that such a "retroactive" structure could be generalised to many, if not all, aspects of music relations, such that we could speak of the retroactive effect of a tonic on the notes of a tonality, constituting them as "3rds" or "5ths" or "2nds", or of the root on the other notes of a chord, or of the later notes of a melody on the notes that come before, determining their particular function within the melodic structure, or of a metrical "1" with respect to the points of a rhythm, determining their particular weight and significance, and so on.

3. Transference

In the previous chapter, we introduced a number of different instances of transference, together with a common structure, in which a point of overlap, of commonality, is sufficient to allow a transference. Thus, we introduced a structure common to Stewart's "transference of a name" – the

247 Schoenberg, *Theory of Harmony*, 156.

basis of Burgoyne's notion of a signifier, as well as Stewart's “analogous transferences” – Freud's “transfer of hostilities”, and Ogden and Richards' “completion”, conceived as the “transference of a context”, though other instances of transference will also emerge in the course of the chapters, when specific to the analysis of Ornette's discourse. Certain of these forms of transference are more prevalent in our discussion of his music and vice versa. In this respect, Stewart's “transference of a name”, which forms the basis of Burgoyne's *signifier*, as well as Stewart's notion of “analogous transferences” more characterise our approach to Ornette's speech, though there are points when these are also introduced in relation to his music. Hamilton's “transference of a relation”, on the other hand, which we introduce in chapter VI, Burgoyne's transference at the level of structure, and the “transference of a context”, which we have developed from a reading of Ogden and Richards, appear more often in our analysis of Ornette's music. This, we suggest, does not reflect a limitation at the level of the tools themselves, but rather is an effect of the particular way our argument develops, and the particular problems each tool is drawn in to address.

In terms of making sense of Burgoyne's notion of a signifier in relation to music, one thing we are looking for is those points at which musical experience is characterised by such an experience of “partial identity” – of identity in difference – those points where there is an experience that some thing is the same as some other thing, even though, in the shift from one to the other, some things are different. And, of course, such points are to be found everywhere in musical experience – in our experience, for instance, that two different frequencies are the “the same pitch”, that two phrases, with differences at the level of their respective pitches, are “the same phrase”, that two, quite different performances are performances of “the same piece”, and so on. Whilst we may not imagine that listeners, in their experience of a piece of music, transfer signifiers “naming” perceptions, any experience of identity, of recognition, insofar as it implies something like, “that motif (again I heard just now)”, or, “that bit (again from earlier)” – let alone the little letters, such as *a* or *b*, that music analysts sometimes use when analysing motivic recurrence in a piece of music – could all, in a sense, be treated as signifiers, transferred according to Stewart's law governing meaning shifts, contingent, that is, on a listeners' experience of partial identity with respect to one other point of the existing class of meanings. In this sense, for instance, the experience of partial identity that constitutes an experience of transposition – “Ah! That motif again, but at a different pitch...!” – implies the transfer of a “signifier – “that motif...” – on the basis of an experience of a “quality in common” – of a relation of partial identity – at the level of the intervallic structure internal to those motifs, on account of which they are to be experienced as “the same motif”. “Stewart's law” governing meaning shifts can thus be said to govern our experience of music, both allowing subtle shifts to occur, such that we experience identity where there is difference, but on the condition that such shifts are “grounded”, in Stewart's sense, by the experience of a relation of “partial identity” – the experience, that is, that two phenomena are, at least *in part*, “the same”, and are thus to be referred to by way of the same term.

4. Space

As we have stated before, a key feature of our approach is an attention to relations, particularly insofar as relations can give a particular character to space, as well as to movement through that space. The search for allusions to relations in Ornette's speech is, in this sense, one significant

characteristic of our approach to his discourse, together with an attempt to think through the particular spatiality and movement through such spaces such relations imply. Each of the chapters from V to IX thus gives attention to relations in particular ways, with chapter V, "No one knew where to go", introducing a Hamiltonian approach to intervallic and *tonic relations*, chapter VI, "Invisible", introducing *free relations*, chapter VII and VIII, *solitude relations* and *non-relations* in relation to "Lonely Woman", and chapter IX, *Skies of America*, introducing the key Ornettian notion of "unison", conceived as a *unison relation*.

Order

However, insofar as order implies a distinction between *antecedent* and *consequent*, *what leads* and *what follows*, order relations are also central to giving a formulation to the question this thesis seeks to address, of what it means to follow. *To follow* means, in a first instance, we could say, to be subject to an order relation so as to be situated as consequent with respect to those points situated as antecedent by that relation. In the case of the ordered set with more than two elements, however, the question of consequence, of what follows, is slightly more complicated, for there is both what might be called *immediate consequence* – what *immediately* follows a given point, x, what comes *next* at the level of the order that pertains to the set, as well as the wider subset of points all of which follow, all of which are "greater than", with respect to a given point x, at the level of the order that pertains to the set. The distinction between these two forms of consequence – between all of the points that follow, and the points that follow immediately – can be addressed by means of an open interval of the linearly ordered set. With (x, y) as an open interval (which, as open, does not contain its boundary points, x and y), if (x, y) is empty, this must mean that there are no points between x and y, and thus that y immediately follows x at the level of the order that pertains to the set. The point, y, is an *immediate consequent* with respect to x. All other points that follow x but are not y are consequents, but not immediate consequents. If (x, y) is not empty, then y does not immediately follow x in that order. However, if there are points (y, z) that follows a given point x, and an *immediate consequent* – a point, y, that immediately follows x, it would also be possible to determine a *final consequent* – a point, z, which follows with respect to all other points of a linearly-ordered set. The "final consequent" is simply any point, z, with respect to which all other points of that set are "less than" at the level of the order, or, inversely, any point, z, "greater than" all other points of that set, at the level of the order that pertains to that set. We could then name an *intermediate consequent* of x any point that follows x at the level of the order that pertains to a set, but that is neither the immediate consequent nor the final consequent.

Equivalence

With *unison* a key signifier in Ornette's universe, one very simple form of equivalence relation, nonetheless vital to this thesis, is the notion of a musical unison (represented as difference, 0, it is reflexive, symmetric and transitive), though equivalence relations are also at the heart of the notion of *transference*, in Stewart's sense, as discussed earlier, and thus also at the heart of the law that governs meaning shifts, contingent as these are on the notion of commonality at the level of properties. Equivalence comes up particularly in chapter VI and after.

Vectors

In chapters V and VI we draw in the work of William Rowan Hamilton on *vectors*, and their relation. Vectors in Hamilton's terms are a particular form of relation – a directed distance – produced by the "analysis" of one point – one spatial position – with respect to another point – another spatial position, with analysis given in terms of subtraction thus; B – A = *a*. This is, of course, the exact form of the metric offered by Forte[248] – | *x* – *y* | – with the exception that this metric treats a Hamiltonian vector as an absolute value, as, that is, distance without regard to its "direction". Hamiltonian analysis by subtraction thus implies a metric space and, insofar as the concern is to analyse spaces other than metric spaces, its use has its limits. However, as Hamilton's specific arithmetic also offers for us a way of producing directed pitch and time "intervals" (in the musical sense), the specific arithmetic articulations he proposes are not meagre tools for the purposes of this thesis, for references to intervals and related phenomena are everywhere in Ornette's discourse – chapter VII is, in a sense, an attempt to deal with the somewhat idiosyncratic definition Ornette gives to the notion of an interval in his 1960 interview with his friend and mentor, Gunther Schuller.

If relations can give character to spaces, as implied by Hausdorff's conception of a *metric space* as a set of points with a distance function – a metric – on that set, or by his generalisation of the notion of neighbourhood to ordered sets, which he conceives in terms of a set with an order relation on that set, this enables us to characterise a musical space by means of musical relations. We will present here just two musical spaces, however – pitch space and duration space – and introduce other, related spaces in the chapters as they arise in the context of our broader discussion.

Pitch space

We define a chromatic pitch space, *P*, using the simple metric proposed by Allen Forte for the constitution of interval-distances.[249] With *P* as a set of chromatic pitches mapped to the set of integers, to each pair of points (*x*, *y*) of *P* is assigned an integer, *xy*, the chromatic interval between these two points, which is the difference of these points treated as an absolute value | *x* – *y* |. This value is absolute insofar as the difference produced by means of subtraction is treated as distance without regard to "direction" – without regard, that is, to whether the difference-value produced is positive or negative. Thus 5 – 2 (= 3) and 2 – 5 (= -3) produce a difference with the same absolute value, |3|. Whilst Forte defines this metric on a set of pitch *classes*, with the assumption of octave and enharmonic equivalence, we define this metric on a set of pitches, with no assumption of octave equivalence. This allows us to distinguish the interval of 2 semitones from an interval of 14 semitones, for instance. Because our metric is most often defined on pitches as transcribed from audio recordings, with no score to guide us, we do, however, treat pitches as enharmonically equivalent. Whilst our approach to pitch space is closely related to Tymoczko's, whereas Tymoczko proposes a formula[250] for a continuous mapping between frequency and pitch, Ornette's discourse

248 Forte, *The Structure of Atonal Music*, 209.
249 "If a and b are pc integers, then the interval formed by a and b is the absolute (positive value of the difference of a and b (| a – b |)". Forte, *Structure of Atonal Music*, 209.
250 Tymoczko's formula is the following: $p = 69 + 12 \log_2 (f/440)$, where p is a pitch number and f the fundamental

implies a relation that is not one-to-one. We discuss this in chapter IX. Correlative to this, Tymoczko's pitch space, in which each frequency is mapped to a distinct value from the set of real numbers, may fail to account for the way such differences internal to (the experience of) a particular space, may be experienced as "insignificant" – as, in other words, not constituting distinct points in a pitch system, but frequency variations in the realisation of the same pitch. (This is not to say that such variations are "insignificant" in other, broader senses).

All of Hausdorff's "distance axioms" pertain to our space, insofar as

1) $\overline{xy} = \overline{yx}$ – the interval between x and y is equal to the interval between y and x, a stipulation reflected by the fact that distance is defined as an absolute value;
2) $\overline{xy} = 0$, if, and only if, pitches are coincident, and
3) $\overline{xy} + \overline{yz} \leq \overline{xz}$; insofar as this space is "one-dimensional", the < is redundant – $\overline{xy} + \overline{yz}$ is always equal to $\overline{xz}$.

With distances between pitches thus defined, we can then form "spherical" neighbourhoods of a point x, in chomatic pitch space thus; a neighbourhood U_x of x is a neighbourhood containing all those points less than an arbitrarily chosen "radial" distance from x, as shown in *fig. 4.1*. With this distance as two semitones, the neighbourhood U_C of the pitch C contains all those pitches whose interval-distance from C is less than two semitones. As this distance is "radial", this neighbourhood contains pitches on "either side" of of the chosen pitch, C – the $C\#$ and D immediately "above" C and the B and Bb immediately "below".

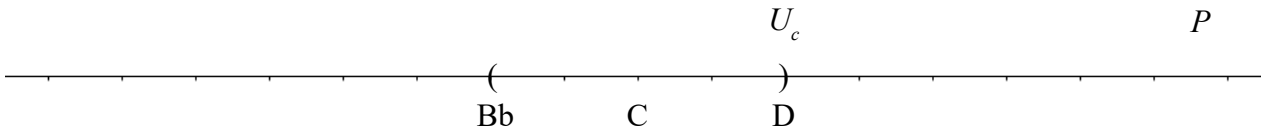


Fig 4.1

The properties of the neighbourhoods of pitch space, P, so defined, satisfy Hausdorff's three axioms for a topological space:

1) there is a neighbourhood U_x of each pitch, x, of P and each neighbourhood of x contains x – for any pitch, x, in other words, it is possible to create a neighbourhood as defined that contains that point;

2) for any two neighbourhoods U_x and V_x of x, there exists a third neighbouhood, W_x, which is contained in the intersection of U_x and V_x – in this instance, insofar as these neighbourhoods

frequency to be matched to that number. In order to reflect the experience of octave equivalence, Tymoczko then maps each pitch in this space to its equivalence class, where $p \sim p + 12$, forming a circular quotient space (a topological space simply formed by mapping points to their equivalence classes) of pitch *classes* (roughly, pitches that share a letter name). Tymoczko, "The Geometry of Musical Chords", 72.

are "spherical", any neighbourhood of x, V_x, contained in U_x will also function as W_x, insofar as any set is a subset of itself;

3) for any point, y, contained in a neighbourhood of U_x of x, there is a neighourhood U_y or y, which may or may not contain x, but which is contained within U_x.

At a first, very simple, level, it is possible to see that a "neighbour tone" ("auxiliary note") relies on such a notion of a "spherical" neighbourhood in Hausdorff's sense, where the neighbourhood of a given pitch x contains those points (pitches), y, a "step" (semitone or tone) away in pitch space, in either direction. We could thus generalise the notion of a "neighbour tone" to a number of neighbour tone movements – appogiaturas, passing notes, and so on – all involving movement to and from pitches contained in neighbourhoods so constituted.[251]

Duration space

Fig. 4.2 shows a simple duration space that builds on the work of Hasty[252] and, more recently, Popoff and Yust.[253] The "points" in this space are common, written durations – quarter notes, eighth notes, and so on. The relations between points (durations) are *quotients*, simply because they are the product of division. Thus a half note divided by a quarter note produces a quotient *2*, simply because ½ divided by ¼ = 2. In this duration space, quotients only relate durations to their multiples; in other words, there exists a quotient relating two durations only if the smaller duration divides the larger duration equally. Thus, there is no quotient relating a dotted eighth note and a quarter note, because ¼ is not a multiple of a dotted-eighth note – i.e. ¼ divided by 3/16 does not equal a whole number. Quotients thus represent pathways in a duration space linking durations that "go into" other durations without remainder. The existence of such a pathway reflects the fact that, given, say, a quarter note, it is possible to easily produce, to "get to", a whole note, simply by "adding" four quarter notes "end to end". "*q*4", in a sense, means, at least in part, "how many times a smaller duration must be repeated "continuously" (end to end) in order to produce the larger duration". Faint grey lines indicate positive prime integers other than 2 and 3. We have not included these for sake of clarity. As implied by Yust's analysis of metrical "networks",[254] the duration space proposed here is a *partial order* where "<" means "is a divisor of"; thus $x < y$ means, "x is a divisor of y" or "y is a multiple of x". It is a partial order because it is reflexive (x is a multiple of itself), not symmetric (x is not a multiple of y where y is a multiple of x) and transitive (if y is a multiple of x and z is a multiple of y, then z is a multiple of x). This order is non-total *partial* order in the sense that this relation does not necessarily relate all the points of the space to one another – it is not necessarily the case, for instance, that y will always be a multiple of some other point of the space, x, or, inversely, that x will be the divisor of some other points of the space, y. However, whilst this space as a whole is a non-total partial order, *chains* lie within the partial order, where a chain is defined as a totally ordered set – each point of the chain, in other words, is related to every other point of the chain by means of the relation. For instance, the eighth-note triplet, quarter-note triplet

251 These short description of course leaves out the specific accentual determinations which need to be taken into account in order for a pitch to be treated as "dissonant".

252 Hasty, *Metre as Rhythm.*

253 Popoff and Yust. "Meter Networks: A Categorical Framework For Metrical Analysis".

254 "Meter Networks".

and minim form a linear chain, for our relation relates eighth-note triplets to quarter-note triplets, quarter-note triplets to minims, and eighth-note triplets to minims. These chains will be important in our discussion of musical metre in chapter VII, though our intention there is not to offer a new theory of musical metre, simply to give a clear articulation to our analysis of Ornette's speech in terms of the relations that constitute this space. We will notate these chains as ordered sets, however, to distinguish, for instance, the chain, (eighth-note triplet, quarter-note triplet, minim), from (eighth-note triplet, quarter-note, minim). This is necessary, because both are distinct chains of the partial order, but their interval notation is the same – (eighth-note triplet, minim). Other spatial features will be introduced throughout the thesis, as they emerge from our analysis.

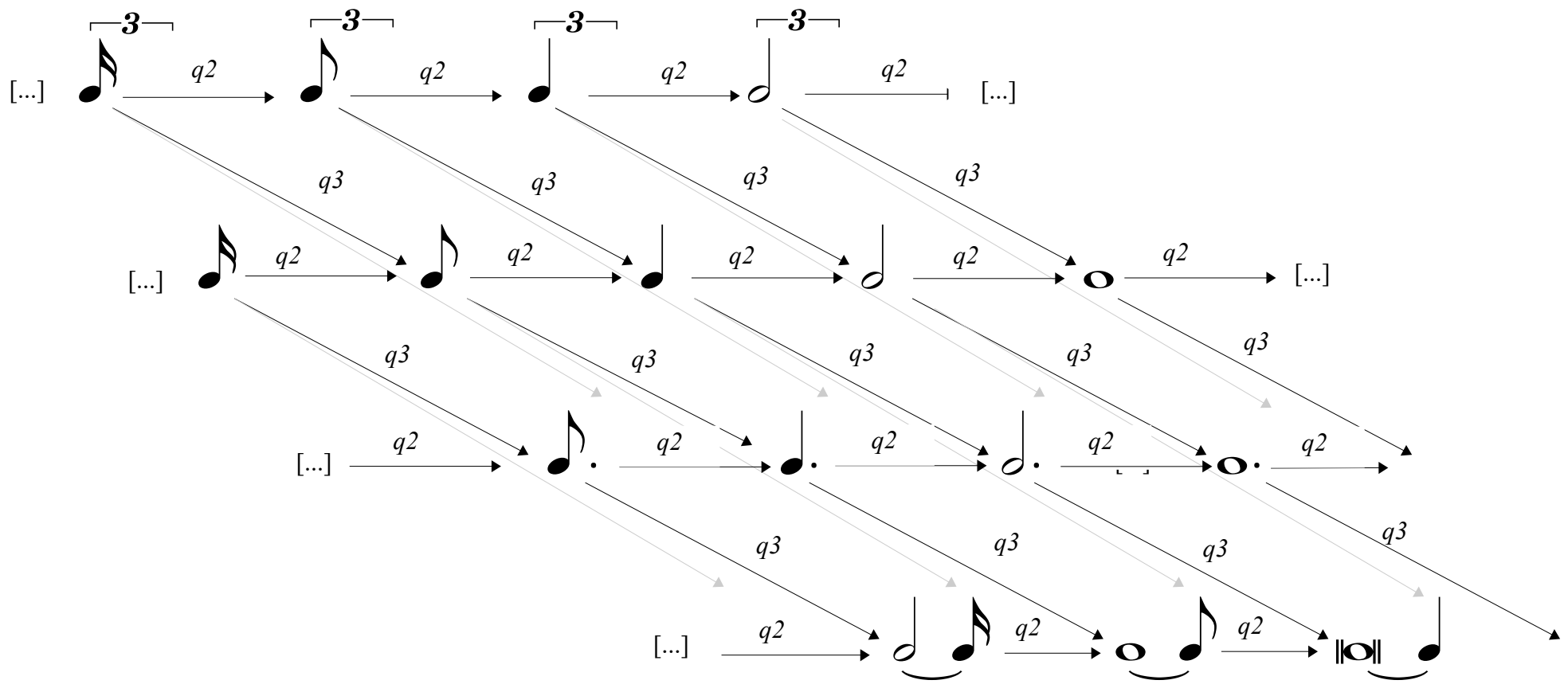


Fig. 4.2

5. How the different tools work together

There was an initial period of searching Ornette's discourse for important signifiers – repetitions and insistences that would constitute *quilting points* in Ornette's discourse. Here, a number of signifiers came to the fore – "unison", "interval", "harmolodic", "complete", "free", "tonic", "movement", in particular – points of quilting that, as we noted earlier, were subject to some significant transferential shift. As such, the analysis of these points of quilting entailed analysis of the *grounds* for such shifts, the specific "qualities in common" – the "partial identifications" – making such shifts possible. We gave priority to speech that referred directly to Ornette's music, to those statements that would constitute the basis for an analytic approach. For instance, Ornette's statement regarding "Invisible", the first piece on his first album, *Something Else!!!!*, that "the melodic direction is pretty free", offered a number of potential clues and analytic avenues to pursue; we found here a connection between the transpositional relations in that piece and the notion of a "free vector", implying a particular sense for a "free direction". This is discussed in chapter VI.

As the question of *space* became more significant in our analysis of Ornette's discourse, particularly following Ornette's response to Charlie Haden regarding direction in his music – "you follow me and you go where I go", as well as to the question of "where to go", which referred directly to "space" – our analysis of Ornette's discourse shifted to a search for signifiers implying relations and the spaces they characterise, as well as movements internal to that space. Here, for instance, the notion of "interval" was of particular interest. If Ornette's speech implies particular spatial qualities, as well as movement through that space, we were then in a position to relate our analysis of the specific pieces to which Ornette referred to some topological notions, drawn from the work, primarily, of Felix Hausdorff. For instance, there is a careful connection to be made between the topological notion of an "isolated point" and what Ornette refers to as the loneliness of the "Lonely Woman". We discuss this in chapter VII. As Ornette's speech shifted our attention to relations other than specifically musical relations, but with respect to which musical relations were to be considered in a kind of parallel – we are thinking here of Ornette's statements regarding "Lonely Woman" in his interview with Jacques Derrida – there was a question, first, of how such statements were to be analysed, and, second, how such analyses were to be related to our analyses of the music to which these statements referred.

Finally, we give a priority to the analysis of Ornette's composition, not only because of Ornette's own insistence that he be considered a composer, and not (merely) an improviser – a distinction with resonances, of course, at the level of signifiers of race – but also insofar as the composition marks a singular point in Ornette's process prior to any concrete, collective articulation in the form, for instance, of a group improvisation. The relations that make up the composition, constituting its specific character, are Ornette's own in a way the relations internal to a collective improvisation are not.

6. Source material

Interviews

Much of the written or spoken material analysed in this thesis is drawn from interviews published in music journals, in liner notes, in longer texts on Ornette's work, such as John Litweiler's,[255] and from the author's own transcriptions of Ornette's interviews with, for instance, Gunther Schuller.[256] In addition, we transcribed numerous compositions and improvisations from Ornette's recorded work between *Something Else!!!!* in 1958 and *Skies of America* in 1972, only some of which appear in this thesis. Though we do not deal with musical material beyond this, we do rely on interviews given by Ornette at times beyond this temporal range. The author also travelled to the United States in 2015 to interview a number of musicians who had worked, or spent time discussing music, with Ornette. These musicians were: Charles Ellerbe, Al McDowell and Bern Nix, all of whom appeared on Ornette's *Virgin Beauty* and *In All Languages*; Karl Berger and Ingrid Sertso, two musicians who set up the Creative Music Foundation with Ornette in the early 1970s;[257] John Giordano, who conducted and, in a sense, re-arranged, the version of *Skies of America* that appeared on Shirley Clarke's film about Ornette, *Made in America*;[258] Ed Schuller and George Schuller, sons of Ornette's friend, Gunther Schuller, both of whom played, or experienced distinctive auditions, with Ornette; and younger musicians, such as Matt Lavelle, Dave Moss and Federico Ughi, all of whom had spent extended periods studying and playing with Ornette at his New York apartment. Finally, I travelled to Paris to interview the critic, Thierry Jousse, who had arranged for Derrida to meet Ornette in 1997, and who was present at their meeting. Whilst material from all of these interviews may not appear in the thesis, they were nonetheless all invaluable as contextualisation for the author's own thoughts.

One particularly important interview for chapter VII is the discussion between Derrida and Ornette printed in the French music journal, *Inrockuptibles*, about which it is necessary to say a few words in anticipation of our discussion of "Lonely Woman".[259] Although the text that appeared in *Inrockuptibles* was in French, the original conversation between Ornette and Derrida was, in fact, conducted in English,[260] and when an English version of this conversation did appear in *Genre* in 2004, it was not a transcript of the original conversation in English, but a translation from the French *translation* – a translation of a translation.[261] Of course, the original conversation was recorded to tape, but, alas, it appears that all trace of this recording, as well as knowledge of the identity of the original French translator, is lost.[262] Given this process of translation, and translation of translation, there is, of course, a dimension of uncertainty with respect to the status of the texts we have in front of us, but rather than simply abandon this vital interview, marked as it is by the uncertain movement from one language to another (and back again), what we have proposed is a

255 Litweiler, *Harmolodic Life.*
256 Coleman, interview by Schuller.
257 Berger was also a one-time PhD student with Theodor Adorno.
258 Clarke, *Made in America.*
259 Coleman, interview by Derrida.
260 This was confirmed to me by Thierry Jousse, when I interviewed him in 2019.
261 This was confirmed to me by the translator, Timothy Morton, in a private email exchange.
262 Again, this was confirmed in my interview with Thierry Jousse, who was responsible for the recording, as well as for organising a translator.

kind of reverse translation – an attempted "untranslation" – moving back from signifiers appearing in the French to the range of possible English signifiers these French signifiers may have translated. The problem with this approach, of course, is that the relation between one language and the next is not one-to-one – the same French signifiers can translate a number of different English signifiers, and the same English signifiers can be translated by a number of different French signifiers. In this specific context, for instance, the movement from English to French is to be assumed to be *many-to-one*; for each one of the signifiers chosen to appear in the French text, in other words, it is possible to uncover many possible English "correlatives". Given this uncertainty produced by the relation between translation and translated, our use of this text will thus be marked by a certain contingency, and, in this sense, the presence of texts from elsewhere will also function to support and situate any interpretations made in relation to this somewhat unreliable document. We hope one day, by some miracle of fate, that the original recording reappears. In any case, we present our reasons for the specific "untranslations" chosen in the context of that chapter.

Transcriptions

All transcriptions in this thesis were done by the author, except where identified. Any transcription involves interpretation – how the specific temporal configuration of frequencies are to be conceived as, for instance, pitch and durations – and, where possible, there has been an attempt to offer the most open form of interpretation of the sounds heard, pending what is implied at the level of our analysis of Ornette's speech. Thus, for instance, we frequently represent pitches without durational and metrical interpretation. It is perhaps impossible to reduce interpretation to nothing, however, and, in this respect, Ornette's speech has priority over any preliminary interpretation implied by the transcription.

Having established the theoretical coordinates for this thesis, as well as its precedents, we now turn to the work of analysis itself, with each subsequent chapter oriented with respect to a fragment, or fragments, from Ornette's discourse. We start with a fragment that bears directly on the question of *where to go* – of movement, of direction, and of space – a question very close to the one at the heart of this thesis, of what it means to follow, of what it means to *go where I go.*

V. “No one knew where to go”: tonic relations

1. Introduction

In *A Harmolodic Life*, the book on Ornette's work and life by John Litweiler, there appears the fragment of an interview in which Ornette recalls his early experiences with Don Cherry, Charlie Haden and Billy Higgins, the three musicians that would go on to create with him, in 1959, the first of a series of groundbreaking albums, *The Shape of Jazz to Come.* At first, says Ornette, these musicians were interested in “bebop”, a name associated with the music of Charlie Parker and his collaborators, but they were soon to become interested in the music that Ornette was attempting to write, music that would, however, present a question – “the most interesting part” – an problem to be resolved; “what do you play after you play the melody?”[263]

> That's where I won them over. Because when I started showing them how they could do that – you see, when you play a melody, you have a set pattern to know just what you can do while the other person is doing certain things. Whereas, in this case, when you play the melody no one knew where to go or what to do to show that he knew where he was going. I had already developed playing like that naturally. And when I started showing them how I'd done that – I'd take a chord. So you play the tonic, you play the third, and then they found out that they were playing the same space.[264]

If some music – perhaps the music of artists such as Charlie Parker – offered “a set pattern to know just what you can do while the other person is doing certain things”, in the case of Ornette's music, there was a problem of direction, of orientation:

> ...no one knew where to go or what to do to show that he knew where he was going.

To this problem of direction, however, of knowledge with respect to where one is to go, Ornette had already developed a solution, a way of playing that had, he says, developed naturally, and that had to do with the emergence of a shared space:

> I'd take a chord. So you play the tonic, you play the third, and then found out that they were playing the same space.

There are thus a number of initial problems, of questions, to answer:

- First, how are we to make sense of this problem of direction, of this lack of knowledge with respect to “where to go”? What do we mean by *where*? What is a “where”, a “somewhere” to which I go, or from which I come? Then, what does it mean to *go*? What is this movement that takes me from where I am to where I am going? And, if some *where* is *unknown*, what would it mean for such a where to be known? What does it mean to *know where*?

263 Litweiler, *A Harmolodic Life*, 54.
264 *A Harmolodic Life*, 54-55.

- Second, there is the problem of Ornette's solution. “You play the tonic”, Ornette says, “and you play the third”. But what is a “third”, what is a “tonic”, and what about a “third” and a “tonic” indicates the presence of a shared space? Then, if the space that is shared, that is the same, is the space of a chord, what kind of space is this? And how does the discovery that one shares such a space answer the question of direction, of knowing where to go and what to do to show that one knows where one is going?

We take these problems in turn, dealing first with the problem of *going*, of movement, drawing in the work of William Rowan Hamilton, and in particular the distinction between *analysis* and *synthesis* that appears in his *Lectures on Quaternions* – an approach to movement through space that, as we will see, already implies the articulation of the *known* and the *unknown*. Next, we turn to the question of *space*, before investigating Ornette's solution to the problem of “knowing where to go” – a solution in terms of a space that is shared.

And, of course, it is possible to see that the problem to which Ornette appears here to offer a concrete solution – the problem of “knowing where to go” – is a problem close to the one at the heart of this thesis, of what it means to follow, of what it means to “go where I go”. For this reason, we will pay close attention to the solution Ornette offers here, with its mention of apparently prosaic musical features – chords and tonics, and the shared space they imply – before asking how this solution to “knowing where to go” relates to – and, perhaps, in its own way, answers – the question at the heart of our thesis. Ornette's solution will take us to the heart of some thorny questions regarding his music, to do with the relation to chords, to keys and tonality, to the interrelation of chords to form sequences – questions with answers to which each subsequent chapter will return, and with respect to which they will each constitute a point of complication, of rethinking, causing us to resist any too ready a resolution.

2. Hamilton's solution

Vectors

In 1848, the Irish mathematician, William Rowan Hamilton, gave a series of lectures at Trinity College, Dublin, on a new mathematical “calculus”, or method, that had for some years occupied his attention, and to which he was to give the name the “calculus of quaternions”.[265] At the heart of this new method were the new significations he was proposing to give to the four operations of addition, subtraction, multiplication and division, as the “analysis” and “synthesis” of “ordinal” and “cardinal” relations - the ordinal relation of one point to another, in the case of subtraction and addition, and the cardinal relation of one “ray” to another, in the case of multiplication and division.[266] In the operation he proposed to call "subtraction", the sign for subtraction, “-”, was to be the mark of the *analysis* of one spatial position with respect to another position, “point minus point”, the position of one point in space “minus” the position of another point in space, their

265 Hamilton, *Lectures on Quaternions*, 2.
266 *Lectures on Quaternions*, 5

"geometrical difference".[267] Hamilton called the "unknown and undetermined"[268] point in this operation the "analyzand", the symbol, B, for which takes the initial place in the relation, before the subtraction sign, and the other "comparatively simple and known"[269] point, A, the "analyzer", placed to the right of the subtraction mark:

$$B - A$$

The analysis of the position of the unknown point, B, with respect to the known point, A, is an operation that, if performed completely, would tell us not only in what *direction* the analyzand is situated with respect to the analyzer, but also at what *distance*.[270] Thus, considered "synthetically", as in the operation of addition, this "ordinal analysis" would result in a "rule of transition" telling us not only how to set out – in what direction to travel – but also how far we would need to go after setting out from A in order to reach point B.[271] Thus, if, in analysis by subtraction – $B - A = a$ – with a the name of the step, the interval, the spatial *difference* between point A and B, then, in synthesis by addition – $B = a + A$ – the difference, a, between point A and point B "plus" the initial point A produces the unknown endpoint, B.[272] The result of this operation of analysis – a – the transition or "step" from the analyzer to the analyzand, a movement which is always to be supposed a straight line, Hamilton called a "vector".

> This step (which we shall always suppose to be a *straight line*) may also, in my opinion, be properly called a VECTOR; or more fully, it may also be called "*the vector of the point B, from the point A:*" because it may be considered as having for its office, function, work, task or business, to *transport* or CARRY (in Latin, *vehere*) a *moveable point*, from the given or initial position A, to the sought or final position B.[273]

If we take A and B to be points on a number line, where the position of point A is "3" and the position of point B is "5", the analysis by subtraction of point B with respect to point A produces a vectoral difference, a –

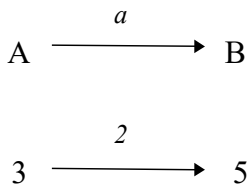
$$B - A = a$$
$$5 - 3 = 2$$

– that, in synthesis by addition, *moves* – "transports", "carries" – a "moveable point" from A *in the direction of* B;

$$B = a + A$$
$$5 = 2 + 3$$

267 *Lectures on Quaternions*, 6
268 *Lectures on Quaternions*, 7
269 *Lectures on Quaternions*, 7
270 *Lectures on Quaternions*, 7
271 *Lectures on Quaternions*, 7
272 *Lectures on Quaternions*, 19
273 *Lectures on Quaternions*, 15

– a movement that could be represented in the following way;

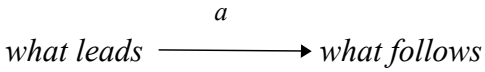


The vector, +2, synthesised – *added* – with respect to the point 3, produces the point 5.

Movement and order

In Hamilton's terms, if analysis produces the *vehicle* – the vector – the means of transport, *movement* itself – *going*, *transport* – is on the side of *synthesis*; it is in synthesis that the "moveable point" *moves*, it is in synthesis that the moveable point *goes* from A to B, from an initial to an endpoint. Movement is thus, in this sense, *synthetic*, the effect of the synthesis of the product of analysis – the analysis of B with respect to A – with respect to the initial point, A, of that analysis.

There is an order that pertains to this synthetic movement, a beginning and an end, an "initial" and "final", a first and last, a before and after, a "where" *from* and *to* which this movement moves. At the level of the order that pertains to vectoral movement, A is the *antecedent* and B is the *consequent*, A is what *leads* and B is what *follows*.



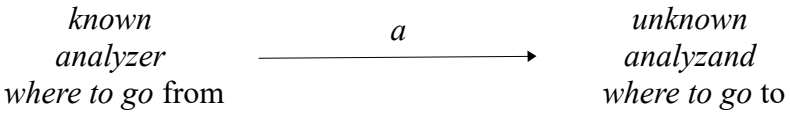
This order – the order that pertains to synthetic movement – is inverted in analysis; in order to produce a vector, the vehicle that will transport a moveable point *from* A *to* B, the antecedent to the consequent point of an ordered pair (A, B), one starts with the consequent, one starts with B, which is then, as the "analyzand", analysed with respect to the antecedent, the "analyzer", A.

B – A

Where and knowledge

To this ordered "synthetic" pair, (A, B), Hamilton maps other distinctions, other pairs; first, the distinction between *where I am to go from*, the initial point of a vectoral movement, and its endpoint *where I am to go to*; second, the distinction between the *known* and the *unknown*, the "comparatively simple and known point", A, and the "complex", "undetermined" point, B; and, third, the distinction, implicit to the notion of analysis, between *analyzer* and *analyzand.* Taking these various mappings together, we can thus say that the analysis of the unknown analyzand,

where to go to, with respect to the known analyzer, *where to go from*, produces the vector, *a*, the vehicle, the means of movement, that, in synthesis, *moves* a "moveable point" from known analyzer, *where to go from*, to the unknown analyzand, *where to go to.*



The concerns at the heart of the dilemma faced by Ornette's collaborators – of *knowledge*, of *where*, and of *going*, of *movement* – thus come together in Hamilton's vector; if *no one knew where to go*, the answer is to be found, says Hamilton, in the ancient distinction between analysis and synthesis, conceived now in terms of the most simple operations of arithmetic; in order to produce the unknown *where to go*, one simply *analyses* the unknown with respect to the known, which produces a vector, a vehicle, a means of movement, that, in *synthesis*, moves "a moveable point" from the known "analyzer" *where to go from* to the unknown "analysand" *where to go*.

What we want from Hamilton

It is perhaps now a little clearer what we want from Hamilton. First, as implied by the overlap between Hamiltonian subtraction and Forte's arithmetic[274] for producing intervallic differences – | a – b | – it is clear that Hamiltonian analysis by subtraction will produce a simple musical interval, where the points to be analysed are points – for instance, pitches – mapped to a number set. If we treat the differences produced as "absolute", as does Forte, then the interval will be "undirected". If we do not treat the difference produced by means of subtraction as absolute, the interval will be "directed" – in other words, a *vector*, in Hamilton's sense.

Of course, there is the possibility of confusion when we talk about musical" intervals", correlative to the shifting senses of "step", which, in its more everyday sense, could refer to an object stepped on, as well as the movement *between* two such objects – "step", in other words, as tiered support for one's foot, as well as movement between such supports. The vector produced by means of Hamiltonian analysis by subtraction implies the second of these; the "3" of a vector with a value +3, in other words, indicates how many unit steps (movements between points) one must take from a given point, *x*, in order to reach another point, *y*. The "3" of a "3rd" interval, in the musical sense, however, indicates how many "steps" – how many *points* in the space – one must "stand on" in order to go from an initial to a final point, including those points.[275] When we speak of "intervals", then, it will be in Hamilton's sense, though there is of course a relation between the two.

274 Forte, *The Structure of Atonal Music*, 209. Forte's arithmetic was discussed briefly on page 62 of this thesis.
275Thus, the "interval" between 2 and 4 is a "third" because of the number of points between and including 2 and 4. In Hamiltonian terms, the musical interval of a "third" implies, in fact, a vector value of *+2*, which indicates how many unit steps (movements between points) in diatonic space one must take in order to go from 2 to 4 – the second to the fifth "degree" of the scale – and is thus also the value produced by means of Hamiltonian analysis by subtraction – 4 – 2 = *2*.

Precedents for the notion of vector exist in the literature. Notwithstanding the work done by Xenakis on the development of a three-dimensional vector for every any sonic event, representing a melodic interval (measured in semitones), intensity interval (measured in bels) and time interval (measured in seconds), the early work on a notion of an vector appears in the work of Forte, who presents the "interval vector" as a tabulation of the interval class content - the frequency of occurrences of each of his six interval classes in a chosen musical set.[276] More recently, Dmitri Tymoczko[277] has proposed the notion of a vector as an alternative to Lewin's interval[278] and it is, of course, Tymoczko's vector to which Hamilton's vector is most closely-related, though 1) Hamilton's vector is already implied, as we have stated, by Forte's metric for intervals in pitch space, and 2) Tymoczko misses the dimension of analysis and synthesis, with its relation to the known and unknown, which is so important to Hamilton and us.

What the name "Hamilton" thus introduces to our simple, analytic calculation, already present in the work of others such as Forte, is its articulation with a number of concerns at the heart of the question this thesis seeks to answer – *movement*, "going", *knowledge* with respect to this movement, *where*, the space and/or *endpoint* of this movement, and *direction*, as represented by a value that is positive or negative, and closely related to the question of *order*. "Vector", in other words, as Hamiltonian, draws together:

- *movement:* if we speak of or represent a vector, this means that something – what Hamilton calls a "moveable point" – is *going* – *moving* – somewhere;
- *knowledge:* where something is going is from the *known* to the *unknown*;
- *where:* this *where* from and to which are the initial and endpoints of the vectoral movement, (with the implication that the space through which a moveable point moves is metric, a distance space, insofar as Hamilton's vector is a "directed distance", though, in our instance, these "distances" are intervals);
- *direction:* there is a direction that pertains to this movement, represented by the sign for positive – (+) – and negative – (-) – , correlative to *order*, implying a distinction between "what leads" and "what follows", a before and after, a *from* and *to.* This enables us to link two senses of *to follow* – "to go where I go", on the one hand, and "to be consequent at the level of order", on the other.

So, with this tool from Hamilton in hand, let us turn again to Ornette's solution.

3. Ornette's solution

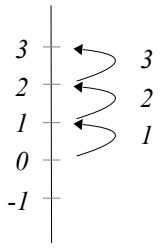
"I'd take a chord", says Ornette. "You play the tonic, you play the third, and then found out they were playing the same space". But, in what sense is this a solution? What is a third? What is a tonic? What do they have to do with a shared space? And in what sense would the discovery that one is playing the same space answer the question of knowledge with respect to direction, of

276 Forte, *The Structure of Atonal Music*, 13-18.
277 Tymoczko, "In Quest of Musical Vectors".
278 See our discussion in the literature review on page 32.

orientation, of knowing where one is to go?

Thirds and tonics

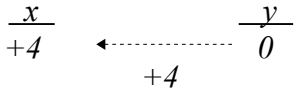
Each value in a coordinate system can be understood as an expression (direct or indirect) of the being of that point with respect to *0*, the point of origin. In the simplest instance – a one-dimensional number-line – this relation is direct; "+3" marks the point three unit steps "up" – in the direction of a point greater than it – from the point of origin, and so on.



Although it is obscured by the fact that the tonic is referred to with a "natural" number, "1" – "the first degree of the scale" – the tonic is precisely a point of origin in this sense. All the names – "3rd", "5th", and so on – are marks of situation, of coordination, of *being somewhere*, with respect to the tonic, just as the values in our number-line coordinate system are marks of the being of those points with respect to the point of origin, as reflected by the fact that a point shares a name with the interval separating that point from the tonic – a "5th" is a 5th interval from the tonic, a "3rd" is a 3rd interval from the tonic, and so on.[279]

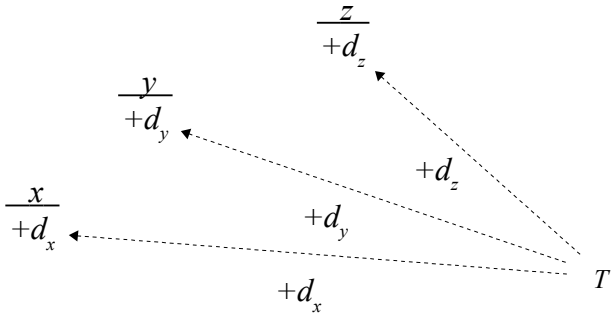
Situating vectors

In terms of Hamiltonian analysis and synthesis, we can thus conceive a *situating vector* in the following way. Where the space is a space of a straight line, the analysis of any point, *x*, on that line, with respect to the point of origin, *0*, will produce a vector that, in synthesis, moves "a moveable point" from the point of origin to *x*, *such that the vector and the endpoint share a name*; *+4* ("a third", when interpreted diatonically) is a point situated *+4* ("a third") away from the point of origin, *+7* ("a fifth", again, when interpreted diatonically) is a point *+7* ("a fifth") away from the point of origin, and so on.



279 In this way, perhaps, what is concealed at the level of the way the musical interval is conceived about the origin-status of the tonic is made visible at the level of the name; "3rd", as on our number line, names both the directed interval with tonic-origin as initial point and the endpoint of that interval.

If "third" is the name given to the point insofar as it is experienced as being (somewhere) with respect to another point, it is possible to see that points *share* a space insofar as they are *situated with respect to a common point* – insofar, that is, as the analysis of those points with respect to a common point produces vectors that, in synthesis, move "moveable points" from the point of origin to these points, with the name given to this common point, the point with respect to which all the points that share a space are situated, *tonic.*



Like the *quilting point* Lacan introduces in his seminar on the psychoses, the tonic is a "point of convergence", a point of intersection, with respect to which all of the points of the space are situated, with respect to which they gain their *being somewhere* – their being 3rd, their being 5th, and so on. Points, in this sense, *share a space* insofar as they are situated with respect to – insofar as they are *quilted* by – a common point, insofar, that is, as the effects of situation that emerge are effects of their being with respect to this common point, the "quilting point".

Tonic vectors

So what of the inverse vector from point to tonic? What of *tonic vectors*? In his treatise on harmony, Heinrich Schenker spoke of the meaning of the tonic in terms of what he called the "egoistic drive of the tone", a drive he related to a certain "aspiration" on the part of the tones when situated with respect to this tonic. "This much is obvious", he says: "the significance of the tonic exceeds that of the other scale steps, and they lose in value the farther they go from the tonic". Thus, "a scale-step does not aspire to the place of a VI or II in the system, but, on the contrary, it prefers to be a V at least, if not a I, a real tonic".[280] This allusion to an "egoistic drive", the *aspiration* the degrees of a key feel with respect to the tonic, and in relation to which there is a loss, a falling short at the level of *value*, echoes, of course, Freud's account, in his essay on narcissism, of the process of *idealisation*; idealisation, says Freud, names the process whereby a man "has set up an *ideal* in himself by which he measures his actual ego", and onto which he displaces his narcissism. Now this ideal, which Freud calls his "ideal ego", finds itself, like the infantile ego, possessed "of every perfection that is of value".[281]

280 Schenker, *Harmony*, 252.
281 Freud, "On Narcissism", 93-94.

However, there is another Freudian coordinate we could draw in here. In his text on group psychology, Freud had turned his attention to the question of groups, and, in particular, to the question of what holds a group together. If the individuals in a group are combined into a *unity* [einheit], Freud asks, there must be something that binds them together, and this bond [Bindetmittel] might precisely be the thing that is characteristic of a group. This something, says Freud, is *Eros – love* – the power "which holds together everything in the world".[282] The group is held together by *emotional bonds – love relations* – that bind members to each other and to the leader. Freud introduces a distinction between two forms of emotional bond that characterise group relations - *being in love* and *identification*. "Each individual", he says, is bound in "two directions" [zwei Richtungen] by libidinal bonds on the one hand to the leader and on the other to the other members of the group".[283] If *identification*, which endeavours to mould a person's ego after the one that has been taken as model, is one of these "directions" characterising the bonds between members of a group, *being in love*, representing a "diversion of the instinct from its sexual aim",[284] is the other, characterising the relation of each members of the group with the leader. In this sense, is possible to see that a Freudian group, at least at the level of the love relation that binds the members of the group to the leader, is a space with a "tonic" orientation. That is to say, a Freudian group is a space in which all the points of the space – the followers – are related – by means of a relation of love – to a common point – the leader, the one put by means of the idealising love of all of his followers, says Freud, in the position of the "ego ideal".

> A primary group of this kind is a number of individuals who have put one and the same object in the place of their ego ideal and have consequently identified themselves with one another in their ego.[285]

Like the points oriented with respect to the tonic, by means of this idealising love, each of those contained in the group, we could say, are thereby *situated* as "followers" with respect to a *common leader*.

Given these coordinates, and, in particular, what Schenker referred to as the *aspiration* the other scale degrees experience with respect to the tonic, their "egoistic drive" to *be* the tonic, implying a movement *in the direction of* the tonic, we thus propose a tonic vector that is the inverse of the situating vector; if the situating vector moves "out" from the tonic to the "degrees" situated with respect to that tonic, the tonic vector moves "in" "aspirationally" from degrees to tonic – a *tonic vector* moves "a moveable point", in other words, from any degree (x) to the tonic (y).

$$x \xrightarrow{Td} y$$

The relation between situating and tonic vectors can thus be represented in the following way, where x is the point to be coordinated, producing an effect of situation, s, and y is the point

282 Freud, "Group Psychology", 92.
283 "Group Psychology", 95.
284 "Group Psychology", 103.
285 "Group Psychology", 116.

coordinated to the point of origin, *0* (i.e. *y* "is" the origin point), as shown in *fig. 5.1*. Then the analysis of *s* – the coordinate to which *x* is coordinated – with respect to *0*, the origin coordinate produces the situating vector, *+d*, which is the inverse of the tonic-origin vector, *- d* (as represented by the "directional" difference between the signs for positive and negative), produced by the analysis of *y*, the point coordinated to the origin coordinate, with respect to *x*.

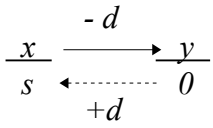
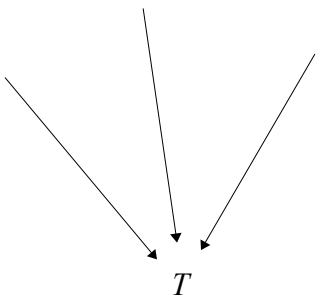


fig. 5.1

If there is a movement that pertains to both the situating and tonic-origin vectors, this movement is also in inverse relation; if the tonic vector moves "a moveable point" from a point, *x*, in the direction of the tonic, *y*, the situating vector moves "a moveable point" back from the point of origin in the direction of the point *x*, situated with respect to that point of origin. As before, an order thus pertains to this movement, with the relation of antecedence and consequence this implies; at the level of the tonic-origin movement, the tonic is the consequent, what follows, whilst at the level of the situating movement, it is the effect of situation (the point to which *x* is coordinated) that is consequent, that follows with respect to the point of origin (the point to which *y* is coordinated).[286] So, in what sense does Ornette's reference to tonic, with the implication of a space of tonic orientation, constitute a solution to the problem of "knowing where to go", in what sense does it solve the problem of knowledge regarding movement, going, and the space or the point in the direction of which one moves, one goes?

If "where" is conceived in terms of a *space* – "no one knew *to which space* to go" – then Ornette's solution is simply that one goes to the space of a chord, conceived in relation to a tonic. "Where I go" is a chord space with the implication that this space is tonic oriented. If "where" is conceived, on the other hand, as a *point* – "no one knew *to which point* to go" – then the reference to tonics offers a simple solution, for given the movement that pertains to the tonic vector, what Schenker referred to as the "aspirational" drive to *be* the tonic, internal to a tonic-oriented space, all "moveable points" move – are moved by the tonic vector – in the direction of the tonic – all vectors move "moveable points", in other words, in the direction of a common point.



286 In this sense, the "followers" of the Freudian group "lead" at the level of the order that pertains to the leader-tonic relation, and the "leader" "follows".

4. Two solutions

With respect to the problem of knowledge – of "knowing where to go" – we now have two solutions. On the one hand, we have Hamilton's solution, given in terms of the ancient distinction between analysis and synthesis, in which analysis of the unknown with respect to the known produces a vector that transports, *moves*, a moveable point from the known to the unknown, with the unknown "where I go" now the endpoint of that movement. On the other hand, we have Ornette's solution, given in terms of *tonics* and tonic-oriented spaces; "where to go" is now the tonic-oriented space of a chord, internal to which all points move in the direction of a common point. Insofar as tonic movement is given in terms of a *tonic vector*, this implies the interrelation of Hamilton and Ornette's solutions, for if tonic movement is produced by means of a Hamiltonian vector, the "unknown" is now the tonic, which, when analysed with respect to each of the "known" points of a tonic-oriented space, produces tonic vectors that move "moveable points" in the direction of this common, "unknown" tonic point. However, when we look more closely at these apparently simple solutions, a number of significant problems appear.

5. Problems

First problem: "Tonic"

If we look more closely at what Ornette has said regarding the tonic, there is a certain ambiguity. "I'd take a chord", he says. "So you play the tonic, you play the third, and then found out that they were playing the same space". But to what does this signifier, "tonic", refer? If "3rd" is a point of the chordal space Ornette has taken, does this imply the "transference of the name", "tonic", from "tonal tonic" to "root" of the chord? Is "tonic" a *transference*, in Stewart's sense? Or does Ornette's reference to "tonic" imply that the chord he has taken is the tonic chord of a tonality – chord I in the key of X – and that, in this sense, the "tonic" and "3rd" of the chord simply coincide with the "tonic" and "3rd" of the key? This is a significant problem from the perspective of the question of where to go, for if Ornette's solution implies a movement to a tonic, to which "tonic" is one to go – to a "tonal tonic" – a tonic in the usual, tonal sense – or to a "harmonic tonic", as implied by a transference from "tonal tonic" to *root* – or both? This question is, of course, not without consequence for the question of tonality in relation to Ornette's music.

If "tonic" is a transference, and if this transference from tonic to root is *immediate*,[287] there is then the question of what would make this transference possible, of what element, what feature in common, would allow the transfer of the name. And, in fact, it is possible to detect, we suggest, some "qualities in common", along the following lines. Given the names given to the points of the chord – "3rd", "5th", and so on – insofar as they are experienced as being with respect to the root of the chord:

- both tonic and root perform a *situating function* with respect to the other points of the space (of the tonality, of the chord), as implied by the names – "3rd", "5th" – marking the being of the points of both a chord and a key with respect to a "harmonic tonic" or "tonal tonic";

287 For "Stewart's law" (see page 40-41 of this thesis), only an immediate transference implies a quality in common.

- they are both *points of intersection*, points of *convergence* – all points of the chord, of the key, are situated with respect to this common point;

- these effects of situation are *retroactive*, implying a relation inverse to the relation that goes from situated to situating, from point to be situated to tonic as situating.

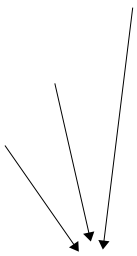
If we were to persist with this transference on the basis of these common qualities, we would then have a distinction between "tonal tonic" and "harmonic tonic" correlative to the distinction between "tonic" and "root".[288]

Second problem: Tonal orientation

The second, related problem is the following: are Ornettian chords, as alluded to in Ornette's solution, *tonally-oriented*, are they, in addition to an "internal" tonic orientation, as implied by the transference we have just described, oriented "externally" with respect to a "tonal tonic"? This question is related to something said by the saxophonist, Julian "Cannonball" Adderley, who, sceptical, but curious, about Ornette's music, met Ornette sometime in the early 1960s to discuss his ideas. "Coleman *does* play chords in an improvisation", says Adderley, in an article for Downbeat describing this meeting, "but does not play "changes", such as standard II minor seventh, to dominant seventh to I or III chords"[289]. In fact, although Adderley quotes Ornette directly immediately before this statement, and at other points in the article in the process of explaining his ideas, the provenance of this insight remains unclear – is it Adderley's supposition regarding Ornette's music, the outcome of his own analysis, or is Adderley reporting something Ornette said to him directly? In the absence of a clear answer to this question, we will proceed, but we will need to treat this statement with some care, situating it with respect to statements Ornette himself has made.

Using the expanded notion of "tonic" an Ornettian transference implies, a space of "changes", as described by Adderley, suggests, in fact, three distinct spaces;

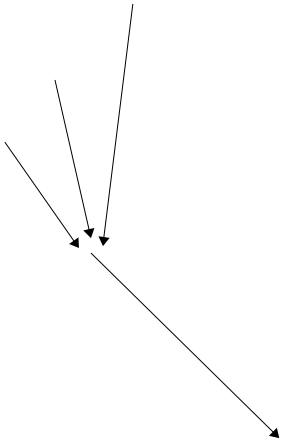
a) the space of a *chord – tonic*, in the general sense we have developed, insofar as the points of that space are experienced as being with respect to a common point of intersection (the "root" of the chord);



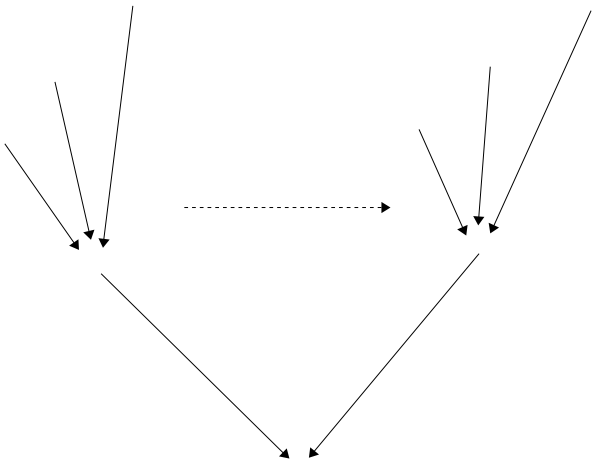
288 This persistence is perhaps encouraged by a statement Ornette makes about the relation between tenor and alto saxophones. "...the tenor is the tonic of the alto". Litweiler, *A Harmolodic Life*, 39.

289 Adderley, "Cannonball Looks at Ornette Coleman", 21.

b) the space of a *key*, insofar as the *chord* is itself experienced as caught up in a wider tonal space constituted with respect to its tonic – the "tonal tonic";



and c) the space of a harmonic "progression" – conceived as an ordered set of tonally-oriented chords.



In this simple schema, each subsequent space, of course, implies the prior space, so b) tonally-oriented chords imply a) chords, and c) a sequence of tonally-oriented chords implies both a) and b).

Adderley's "Ornette does play chords but doesn't play changes" could thus mean a number of different things, dependent on how we interpret the signifiers, "chords" and "changes". If a chord is a "change" insofar as it has a tonal orientation – insofar as the chord, Fm7, is experienced as IIm7,

for instance – then “chords but not changes” implies chords in the absence of such a tonal orientation. If a chord is a “change” only insofar as it is contained in a “sequence” of chords – IIm7 *to* V7 *to* I or III – then this necessarily precludes only such a sequence and not necessarily the tonal orientation for a chord such as Fm7. Briefly, “chords but not changes” thus implies a) with the possibility of b), but not c).

Tonal relation

These three levels, a), b) and c) are represented in the *fig 5.2*, the big diagram on page 84, which shows diatonic chords in the key of Eb. With the exception of the dashed arrows, all of the vectors are *tonic vectors*, implying our transferential expansion of the notion of “tonic” to include the root of a chord, and, as such, they represent the possibility that “tonic”, as we have just discussed, is both a transference from “tonal tonic” to “root” *and* that Ornette's chords are oriented tonally. The centre point of the diagram is the “tonal tonic”, Eb, whilst the notes immediately connected to that are either “harmonic tonics” (the roots of the various diatonic chords) or those notes directly in the diatonic chord (G, Bb, D are thus directly connected to the centre point, Eb, as the other notes of an Ebma7 chord). Double-headed arrows from the centre point, Eb, indicate that Eb is both the “tonal tonic” for a “harmonic tonic”, as well as contained in the chord for which that note is the “harmonic tonic”. Thus, the vector connecting C to the central Eb is double-headed because Eb is both the “tonal tonic” for C and is contained in the diatonic chord of Cm7. The dashed vectors are not tonic vectors, but represent the movement implied by the “changes”, IIm7 *to* V7 *to* I or III.

In this diagram, the tonic relation (represented by the tonic vectors) is transitive, which is to say that if Bb, for instance, is a “harmonic tonic” for the notes of the chord of Bb7, and if Eb is a “tonal tonic” for the “harmonic tonic”, Bb, then Eb will also be a tonal tonic for the other notes of the Bb7 chord.[290] Given the presence of double-headed vectors, however, it is important to note that transitivity does not cross the centre point (Eb) – so, whilst Eb is a tonic for Bb and (crossing the centre point, moving outwards) Ab is a tonic for Eb, this does not imply that Ab is a tonic for Bb.

290 In this limited context, this is correlative to saying that, if the notes D, F and Ab are in the chord of Bb7, and if Bb, the harmonic tonic, is in the key of Eb, then the notes of the chord will also be in the key of Eb.

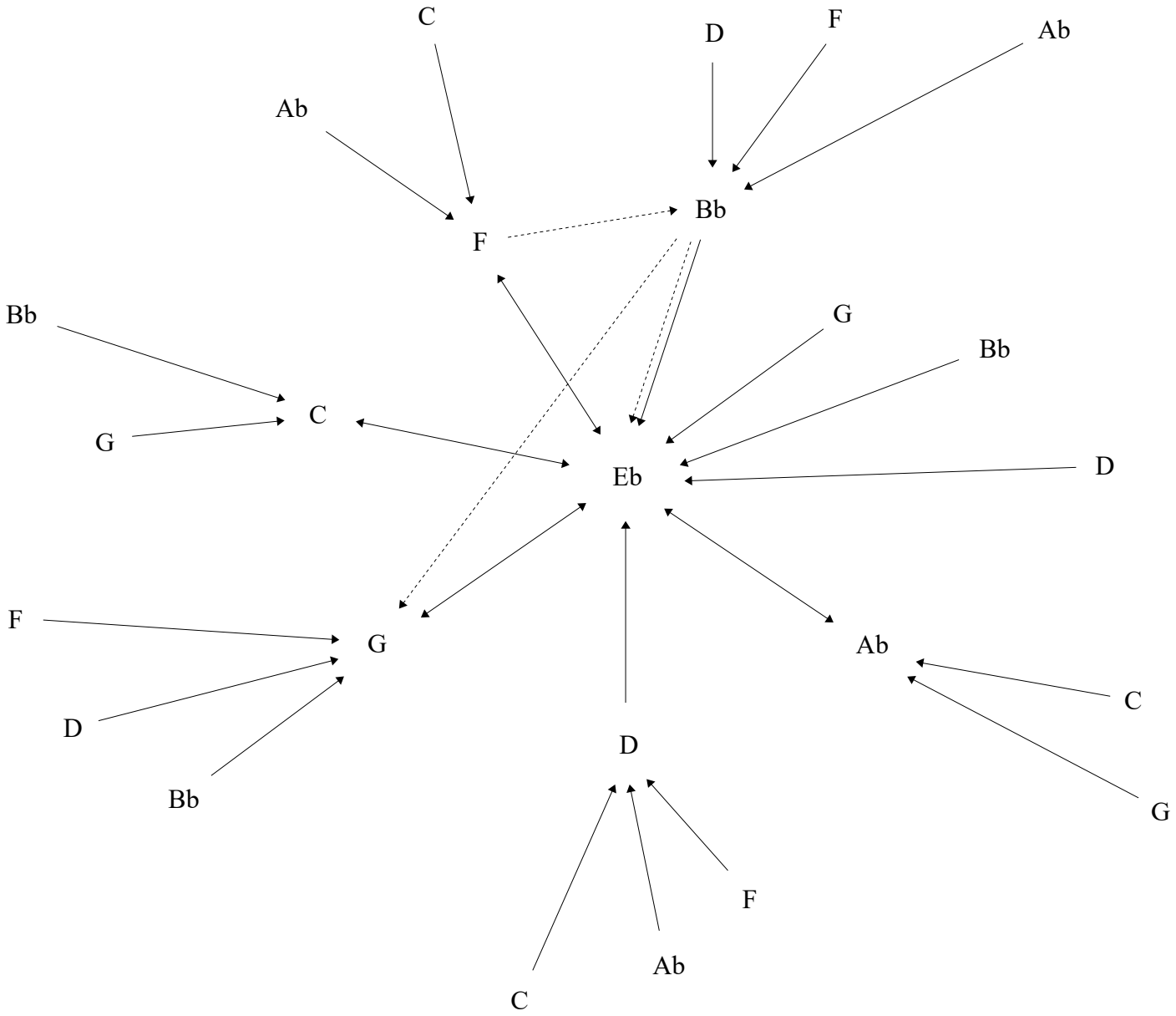
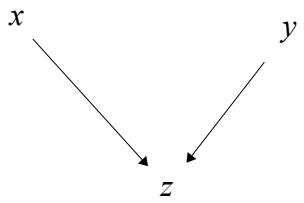


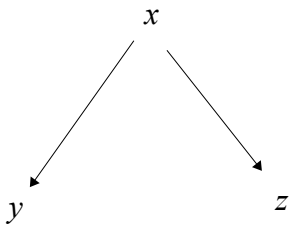
Fig. 5.2

However, a number of further properties would seem to pertain to this tonic relation:

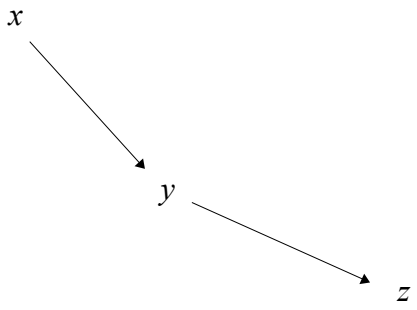
Two points, *x* and *y*, can share a tonic, *z*:



but the same point, *x*, cannot have *at once* more than one tonic, *y* and *z*:[291]



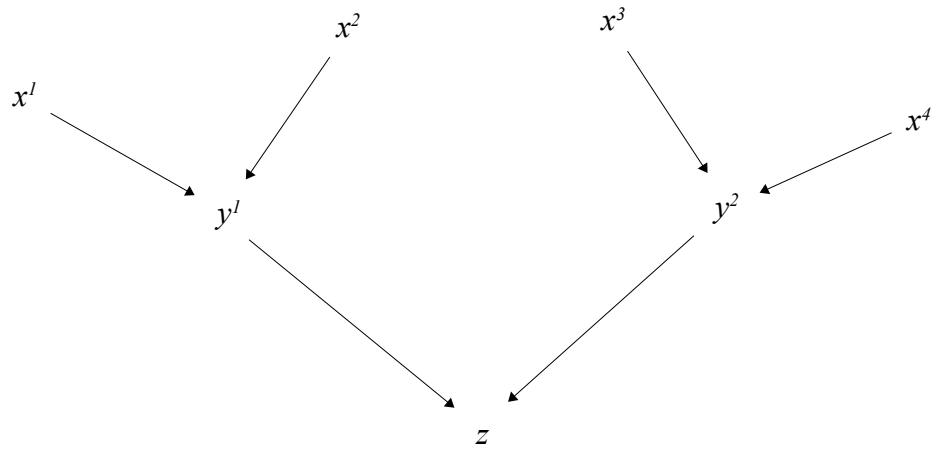
unless *x*, *y* and *z* link together transitively:[292]



291 "At once" implies that two different chords that appear in the diagram are two different "moments"; thus, while, for instance, the note, Ab, appears connected to both harmonic tonics, Bb and F (which, in this limited context, means that Ab is contained in both chords) these moments are exclusive of one another: *either* Bb is a harmonic tonic for Ab *or* F is a harmonic tonic for Ab – not both at once. (This is correlative, again in this limited context, to saying that Ab can be experienced as contained in the chord of Bb7 or contained in the chord of F – both are possible, as represented in the diagram, but not at the same time).

292 See page 49 of this thesis for an explanation of transitivity.

If our tonic vectors imply movement – that something, a "moveable point", is *going* somewhere, that it is moving in the direction of a tonic consequent – these properties produce a structure such that, no matter where any point is in the structure, and, in spite of the immediate point of convergence which is not a point of convergence for *all* of the points of the structure, there is nonetheless a final point of convergence, a point that is a point of convergence for all other points in the structure, and in the direction of which all of the points of the space move. Unlike the other, intermediate points of convergence that may emerge in the elaboration of the structure, the final point of tonic convergence is always and necessarily a tonic for all other points of the structure; all other points of the structure, in other words, always and necessarily converge to this common point. Thus, *z* is a "final tonic" to which all other points of the structure converge, whilst the intermediate tonics, y^1 and y^2 , are not.



The diagram on page 84 has something in common with Rings' "oriented diagraphs", though there are some differences.[293] Where Rings' diagraph is not *symmetrical*, our tonic vectors imply a relation that, like the relation, "is a brother of", is neither symmetrical *nor* not symmetrical; if *a* is the brother of *b*, this does not necessarily imply that *b* is the brother of *a* (she may be his sister), but neither does it imply that *b* is *not* the brother of *a*. This feature is necessary to show that the "tonal tonic" may also be related to a "harmonic tonic" – it may, in other words, also be in the chord for which that "harmonic tonic" is the tonic. We also introduce the stipulation that tonic vectors are exclusive (one at a time), unless points related by means of these vectors form a "chain".

Ornette's solution: summary of problems

In summary, then, the two problems with Ornette's solution have to do with the notion of "tonic". Does it imply 1) a tonally-oriented chord 2) a chord, with "tonic" as transference to "root", with the implication that the structure of tonic convergence is now to be found *internal* to a chord, or 3) both, with "tonic" as the transferential enlargement of the class of "tonics" to contain the tonic orientation of the points of a chord with respect to a root – a "harmonic tonic" – as well as the

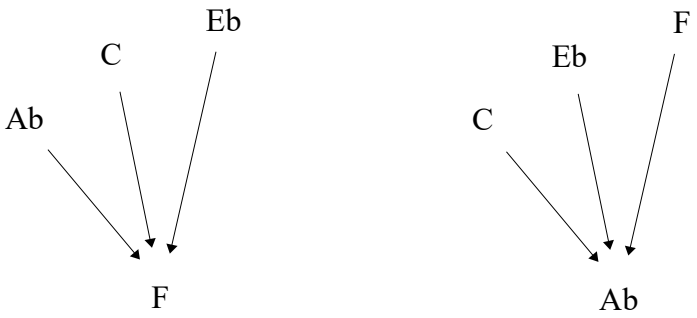
293 See Rings, *Tonality and Transformation*, ch.3.

orientation of the points of that chord to a wider “tonal tonic”, with the third of these possibilities offering an enlarged way of thinking about tonic-oriented spaces, as shown in our big diagram on page 84? Given these uncertainties, we propose to persist, at least for now, with the most open possibility regarding Ornette's solution, in anticipation of answers to be discovered later in this study, with the most open formulation being the following: “tonic” is a transference from “tonal tonic” to root, but this does not preclude the existence of “tonal tonics”; it merely enlarges the class of things described as “tonic”.

Third problem: two “wheres”

The third problem has to do with *where* and can be introduced by means of something Ornette says in the same conversation with Adderley we have been discussing, something about the nature of chords, that bears directly on the question of the tonic orientation internal to them. '“Chords are just names for sounds, which really need no names at all, as names are sometimes confusing”, says Ornette. “For instance”, explains Adderley, “F minor seventh is also A flat major sixth”.

In the first instance, there is an uncertainty about what to make of the apparent identity of Fm7 and Ab6, the notion that Fm7 *is* Ab6. If Fm7 and Ab6 contain the same pitches, if they are identical at the level of their points, but can be distinguished by means of the orientation given to those points, with F the “tonic” in Fm7 and Ab the “tonic” in Ab6, does this imply the insignificance of the tonic relation for Ornette, the insignificance of the only aspect to distinguish one from the other? Or, is the apparent identity of Fm7 and Ab6 an avowal of this very capacity for “modal” reorientation, an avowal of the fact that the tonic is unstable, not given in advance, and that the same set of pitches constituting, for instance, Fm7, can just as easily be reoriented differerently with respect to one another so as to produce, say, Ab6?[294] Given Ornette's explicit reference to “tonic”, we will persist with the second of these possibilities.



This second possibility is significant, for if “Fm7 is also Ab6” implies the reorientation, that the points of an Fm7 chord are to be reoriented so as to produce a Ab6 chord, and vice versa, this introduces a problem at the level of the knowledge implied by the reference to “tonics”, for, in both

294 By “modal”, we simply mean that this reorientation of the points with respect to a new root is analogous to the reorientation of the points of a mode with respect to a new orienting points, as in the shift from C Ionian to D Dorian – the points stay the same, but the orientation changes.

cases, one knows where to go – one goes to the tonic, insofar as both Fm7 and Ab6 imply spaces with a tonic orientation – but this knowledge at the level of the *coordinate* – the tonic coordinate to which one moves – does not imply knowledge at the level of the point *coordinated* to that coordinate. If one knows where – the tonic coordinate – to which to go, in other words, to which tonic is one to go – the tonic of an Fm7 or the tonic of an Ab6? For which point is the tonic coordinate the coordinate?

There are, in effect, two "wheres", two "endpoints" in the direction of which "you" and "I" *go*, of which we move, correlative to the distinction between levels implied by the distinction between tonic and situating vectors. On the one hand, there is "where" as *coordinated*, the specific point coordinated to the tonic coordinate, *0*, and, on the other, there is "where" as *coordinate*, the "*0*" itself, to which a point that "is" the tonic is coordinated. If Adderley's "Fm7 *is* Ab6" implies no necessary relation between coordinated and coordinate, between the point that "is" the tonic – either F or Ab, in this instance – and the coordinate, *0*, to which both, as "the tonic", are coordinated, how does one know where to go, how does one know, even if one "knows" the *coordinate* – that one *goes to 0, the tonic* – "where" to go at the level of the point *coordinated* to that coordinate? Can the relation Hamilton's vector has established between *movement* and *knowledge* help us here?

Analysis and synthesis

One of the earliest articulations given to the distinction between analysis and synthesis appears in the *Mathematical Collection* of Pappus of Alexandria, written in around 300BC. In this text, Pappus defines analysis and synthesis in the following way:

> *Analysis* then takes that which is sought as if it were admitted and passes from it through it successive consequences to something which is admitted as the result of synthesis: for in analysis we assume that which is sought as if it were (already) done and we inquire what it is from which this results, and again what is the antecedent cause of the latter, and so on, until by so retracing our steps we come upon something already known or belonging to the class of first principles, and such a method we call analysis as being solution backwards.
>
> But in *synthesis*, reversing the process, we take as already done that which was last arrived at in the analysis and, by arranging in their natural order as consequences what were before antecedents, and successively connecting them one with another, we arrive finally at the construction of what was sought; and this we call synthesis.[295]

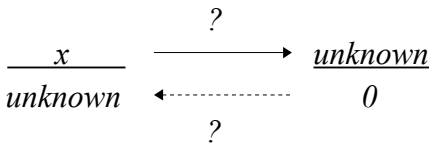
And, in fact, Pappus' definition, which assumes "that which is sought as if it were (already) done", something he relates to the question of "knowledge", of the "known", alerts us to a problem with Hamilton's solution – not, of course, a problem with Hamilton's algebra, which simply restates in vectoral terms (some of) the basic properties of arithmetic[296] – which has to do with its status as a solution to the problem of the unknown we have been discussing. This problem could be stated as follows; if the vector, *-d*, plus the "known" point, A, produces the unknown point B, *one must*

295 In Euclid, *The Elements*, 138.
296 Hamilton's arithmetic is famously non-commutative.

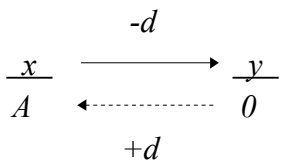
already know B in order to produce B, insofar as *-d*, which produces B when added to A, is the product, the effect, the *outcome* of the relation between the known and unknown points A and B. In relation to "Fm7 is also Ab6", the problem is that, in order to produce the unknown tonic, the knowledge of which would tell us which orientation pertains to a chord – the orientation implied by Fm7 or the one implied by Ab6 – *one must already know the tonic*, for the tonic vector, which produces the tonic when "synthesised" with respect to some point coordinated with respect to that tonic, is the *product*, the *effect*, of the relation between that "known" point and the "unknown" tonic.

An order of coordination

However, the problem is perhaps even worse than it first appears, for if I know the coordinate to which I move – the tonic coordinate – but do not know the point coordinated to that coordinate, insofar as it is the inverse effect of my relation to this point – insofar as the situating vector is the the tonic vector inverted, in other words – this necessarily introduces a problem of knowledge at the level of where I am to go *from* – at the level, that is, of the *coordinate* to which the point from which I go is coordinated. In this sense, it is possible to posit a primordial moment in which where I am going – the tonic – is unknown – it is not known which point is coordinated to this point of tonic origin – and, because where I am is contingent on my being with respect to this common point, where I am, the coordinate to which I am mapped, is also unknown. This predicament that can be represented in the following way, with *0* representing the coordinate of tonic origin, and *x* the point whose coordinate is unknown.

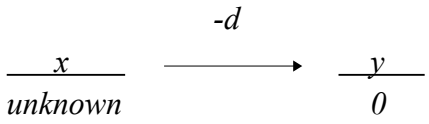


There is thus an order that pertains to coordination, to the solution to the problem of "where I am" and "where I am to go", which we would represent as the ordered set, (*x*, *0*, *y*, *A*).

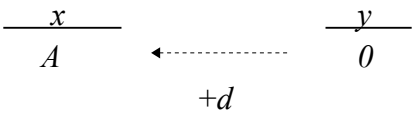


At first, there is an impasse; although Hamiltonian analysis will produce the vector that will move a moveable point from *x* to *y*, *I do not know what y is*, and, since *-d*, the vector that will transport a moveable point from *x* to *y*, is a *product* of the analysis of *y* with respect to *x*, if *y* is unknown, *so is -d*; analysis is stuck at the level of of pure algebraic possibility – we know *how* to proceed in order to produce a specific vector, *-d*, but not the specific elements, *x* and *y*, with which to proceed in order to produce that specific vector. In other words, as we have said, if *-d* synthesised with respect to *x* produces the unknown point *y*, *one must already know y in order to produce y*, insofar as *-d*, which produces *y* when synthesised with respect to *x*, is the product, the effect, the *outcome* of the

relation between the known and unknown points *x* and *y*. At this point, the only solution is to leap, to posit some determinate point as *y*, transforming the unknown *where to go* into the known.



Now with *A*, where I am, the only unknown, and with the set of coordinated points mapped in "parallel" to the set of coordinates, such that product of analysis at one level can be transferred "inversely" to the other, the analysis of *x* with respect to *y* will produce a difference, *+d*, that will "retroactively" transport a moveable point from *0*, the point of origin, to *A*, the unknown *where I am*, thereby producing the unknown as known.



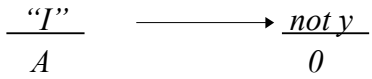
Again, if "Fm7 is Ab6" implies the uncertainty of the tonic, the absence of anything at the level of the pitches themselves – F, Ab, C, Eb – that would allow us to determine the point with respect to which all of the points are to be oriented – if, in other words, there is no necessary relation between the origin coordinate and the point mapped to it, then coordination requires a leap; given *x*, *I*, and the origin coordinate supposed by the question, *where am I?*, there is no way to overcome the impasse of situation other than by positing a point of orienting origin, a particular pitch to be mapped to the origin coordinate, thus producing my own situation, my own being somewhere, as its effect.

However, if this is the case, if knowledge is contingent on a leap that posits the unknown as known – if there is, in other words, no necessary relation between the coordinate and the point coordinated to that coordinate other than the relation established by this leap, then there is nothing to stop two listeners leaping to different conclusions, leaping to two different points of consequences, of end. Returning to Ornette's solution – you play the third, you play the tonic – the third "you" thinks they are playing, may, with respect to the tonic to which "I" has leapt, be something other than a third, whilst the tonic which "I" thinks they are playing may, according to the tonic implied by the third "you" thinks they are playing, be something other than a tonic. So, whilst there is something shared at the level of the space "you" and "I" are both playing – they both play spaces orienting the points they are playing with respect to some elective point of convergence – this does not imply that the points that they are coordinating to the coordinates of this space are the same points; the coordinates are shared, in other words, whilst the points coordinated to these coordinates may not be.

6. What does it mean to follow?

So, what are the consequences of both the solutions we have proposed, as well as the problems that have arisen with them, for the question of what it means to follow, what it means to "go where I go"? First, it is possible to see that Ornette's solution, with its reference to tonics, and tonic-oriented spaces, already entails an answer to the thesis question, for, if a tonic is a point of convergence, the common endpoint of all vectoral vehicles moving "moveable points" through a tonic-oriented space, then to be in that space is *already to be "going where the other goes"*, it is already to be moving in the direction of the point to which all other points of the space move. In this space, "knowing where to go" coincides with "knowing where the others go", insofar as the tonic is a point of convergence, a point of intersection for all tonic vectors, the point in the direction of which all tonic vectors move a moveable point. If our question regarding the status of "tonic" as transference, from "tonal tonic" to "harmonic tonic" complicates this answer, it is nonetheless possible to see that the structure of convergence that pertains to the tonic is itself reproduced at the level of the wider tonic-oriented space. Although there are now, in other words, immediate points of convergence, there are also "final" points of convergence, which are points of convergence for all of the points of the space; all of the points of the wider space move in the direction of this "final", convergent, tonic point.

Second, with respect to Hamilton's solution, in the absence of any necessary relation between coordinated and coordinate, between note experienced "as" tonic, and the tonic-origin coordinate, *0*, implied by that name, "going where I go" at the level of (tonic) *coordinate* does not necessarily imply "going where I go" at the level of the point *coordinated* to that coordinate. "You", in other words, may follow "me", going where I goes at the level of coordinates, whilst *not* following, not going where "I" goes, at the level of the points coordinated to that coordinate.



"To follow", in this sense, insofar as "to follow" implies going to a common point, entails a leap, in which the one who follows becomes, perhaps unknown to themselves, the one who leads, the one who establishes for themselves the point in the direction of which they move, as well as "retroactively", the coordinate for the point from which they have moved.

Closing remarks

To the question of knowledge with respect to "where to go", this chapter has offered a number of

answers, both in relation to Ornette's speech, and in relation to its echo in the work of Hamilton. However, these solutions have introduced a number of problems and questions still to be answered.

1) We are unsure as to the status of "tonic", and whether it implies a transference to the "root" of a chord, and thus either the loss of a wider tonal relation, on the one hand, or the enlargement of the notion of tonic to include "harmonic tonics", on the other.

2) Second, the Hamiltonian solution to the question of knowledge, drawing as it does on the ancient distinction between analysis and synthesis, entails a leap in which the unknown is treated as known; there is, in other words, in the passage from the unknown to the known, a moment of pure contingency, in which the unknown is contingently elected, posited as "known", with the consequence that *there is nothing to ensure that two listeners "leap" to the same knowledge.*

3) Third, there is the question of what the answer we have given to the question of *where to go* – the answer in terms of tonics and tonic-oriented spaces – suggests about the movement *between* spaces, between tonic-oriented chords, for instance. If Ornette "plays chords but doesn't play changes", where changes implies a set of chords in a temporal order, what are the consequences of this, in other words, at the level of "sequence", at the level of the movement from one chord to the next? Are such movements implied by Ornette's discourse, and how does one account for them? We will return to these questions in the coming pages. This is a question we have not addressed directly in this chapter, but is implied in Adderley's statement regarding Ornette's relation to chords and changes.

If Ornette's statements regarding tonics seem to offer a simple solution – one goes to the tonic – this answer, as we will see, will be further complicated in what follows. Each of the chapters that follow will offer, in their own way, a kind of complication of this "tonic-knowledge", this knowledge with respect to "where to go", where this "where" is tonic, and the space it implies. And if Ornette's solution here has implied *tonic direction* – movement in the direction of a tonic point of convergence – we now turn to the question of *melodic direction* – a direction that, as we will see, immediately introduces a problem at the level of tonic direction, immediately calls the identity of a tonic direction into question, turning the question of where to go – the question at the heart of our thesis – into a question of *visibility*, of an endpoint to movement that is veiled, invisible.

VI. *Invisible*: free relations

1. Introduction

When Ornette recorded his first album, *Something Else*, for Lester Koenig's *Contemporary* label in February and March of 1958, he was interviewed for the liner notes by the writer and critic, Nat Hentoff, who asked him about the titles he had chosen, starting with the track that appears first on this album, "Invisible". "Invisible", says Hentoff, "is thus titled because it's rather difficult without concentration to discover the tonal centre of the song". "The key", he says, nonetheless, "is Db", before quoting Ornette directly – "the melodic direction is pretty free", says Ornette. "Actually, these are regular intervals any musician would use anyway, but put together this way, it's very melodious".[297]

"Invisible" thus implies a problem, a difficulty, at the level of the listener's experience of this piece. There is to be assumed a "tonal centre" – the one implied by the assertion that "the key is Db" – and yet it is "difficult without concentration to discover"; there is an effect of veiling, of "invisibility", such that the centre exists, but as veiled, "invisible". At the same time, there is another feature, another, perhaps, somewhat enigmatic, dimension, implied by the words that Hentoff quotes directly – there is a "direction" that pertains to the melody, and that "direction", says Ornette, "is pretty free".

These features suggest a number of questions, of problems, to be addressed. First, what does it mean for a tonic – a "tonal centre" – to be veiled, producing an effect of invisibility, such that it is "difficult without concentration to discover"? Second, what is a "melodic direction" and what does it mean for such a direction to be "free"? Third, what might these two problems have to do with one another – what might "freedom" at the level of direction, in other words, have to with "invisibility", with an effect of veiling? And, fourth, what are the consequences of the answers to these questions at the level of what it means to follow, to go where I go?

Introductory analysis

If we listen to the opening fragments to this piece, "Invisible"; it is easy to see how an assertion of Db major might be supported; all of the pitches belong to the Db diatonic collection, with a tonic orientation of Db producing an effect of Db major, as shown in *fig. 6.1*, with integers showing pitches as Db scale degrees.

297 Hentoff, liner notes, *Something Else.*

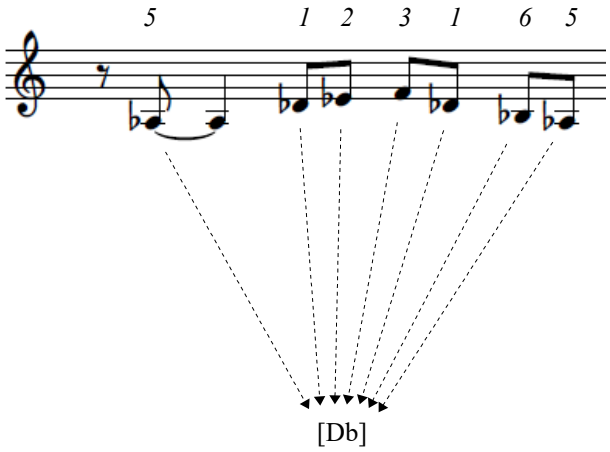
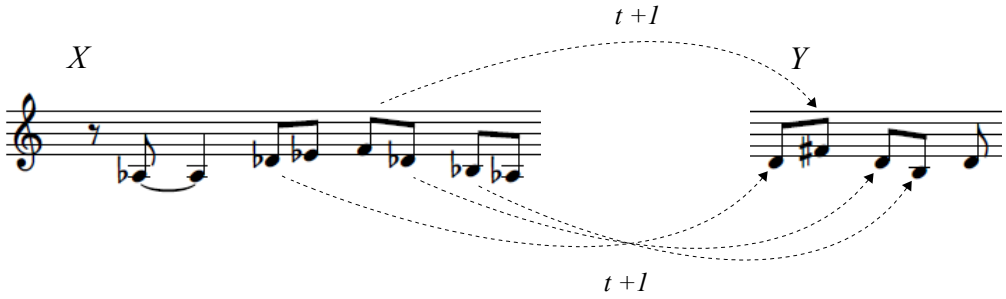
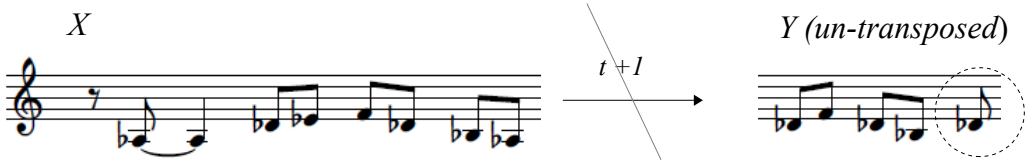


fig. 6.1

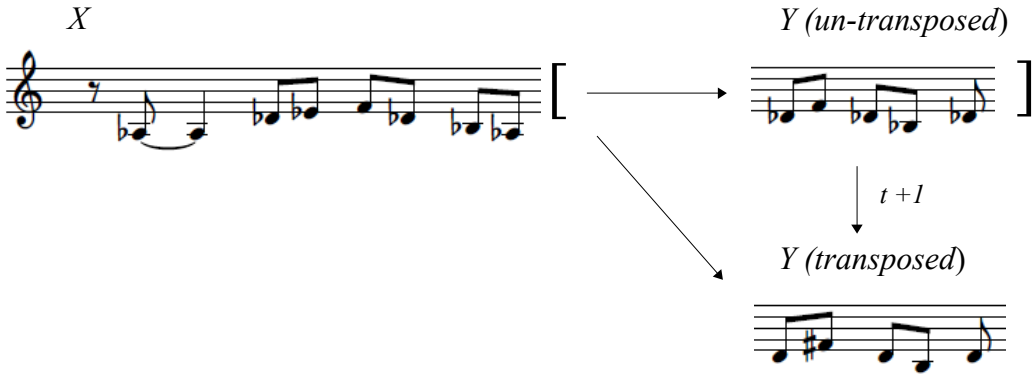
Then, in the second phrase, there is a sudden shift to points not in the Db diatonic collection – D, F#, D, B, D. And, if we listen carefully, it is possible to hear in this second phrase, *Y*, this second motif, a *transposed echo* of the first phrase, *X*, an interpretation supported by the movement of the bass, which shifts up a semitone from Db in the first bar to D in the second.



However, if we then *undo* this effect of transposition, shifting all of the points of this phrase back down a semitone, it is possible to experience an effect of *unveiling*, of a new visibility, as what was veiled, made invisible, comes into view. For each of the points of this un-transposed phrase can now be heard as either stating the centre – Db – or as being with respect to it, finding their meaning in relation to it, as points in its orbit, encircling it, constituting it as centre – as, in other words, *answering the very question at the heart of the experience of invisibility*, the question, that is, of the "tonal centre", as shown, with Db, the "tonal centre", circled.



If, un-transposed, the second phrase offers an answer to the question of what had been made invisible, it is possible to discern that, insofar as what is veiled, made invisible, is the tonal centre, *it is transposition that performs the veiling function*, it is transposition that makes something that was "visible", "invisible". In the movement from one point to another, something else appears - something takes the place of another, and an effect of veiling, of concealment, is produced.



So, if transposition is the cause of the effect of veiling, if in "Invisible", as we have suggested, transposition veils the tonal centre, making it "invisible", what is transposition such that it produces these effects? What are its properties, its mechanisms that would account for such a relation?

2. Transposition

The transference of a relation

In a prelude to the later work on geometrical space in which he developed the notion of a *vector*, William Rowan Hamilton proposed to constitute algebra as a "science of pure time", as geometry is a science of pure space, replacing the dimension of magnitude with relations of temporal order – *coincident*, *before*, *after*.[298] In the early sections of this text, Hamilton proposed a new notation to represent not only the ordinal relations between points, but also the *relations between the relations* between these points. An "analogy", in which a difference between two distinct points in time (A, B) is equal to the temporal difference between another two points (C, D), was thus expressed -

$$B - A = D - C^{299}$$

- and a "continued analogy", in which the points form an equidistant series, insofar as the "mean" values (the values situated on the inner side of the equation – B and C in the case of the analogy above, rather than, like A and D, at the "extremes") are coincident, in which they coincide temporally, was expressed thus:

298 Hamilton, "Theory of Conjugate Functions".
299 "Conjugate Functions", 10.

$$B' - B = B - A^{300}$$

Hamilton called this repetition of a relation, of a difference, *transference* - "the repeated transference of one common ordinal relation, or the continued application of one common mental step"[301].

Hamilton's notation for the analysis of points in time was exactly the notation he would later use for the analysis of points in geometric space, where B – A means, "the analysis of point B with respect to point A", so as to produce the "step", the movement, that would take you from point A to point B – what he would later call in his *Lectures on Quaternions* a *vector.* If we thus transfer this notion of "analogy", then, to pairs of points in space, and, in particular, to pairs of points in pitch space, B – A = D – C now means, "the analysis of pitch B with respect to pitch A produces a vector equal to – the same as – the vector produced by the analysis of pitch D with respect to pitch C". In *fig. 6.2* and *fig 6.3*, these differences are shown as *a* and *b*.

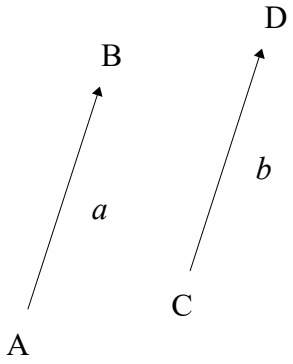


fig 6.2

This analogy is "continued" where the mean points coincide, where, in other words, the endpoint of *a* and the initial point of *b* are the same point, B.

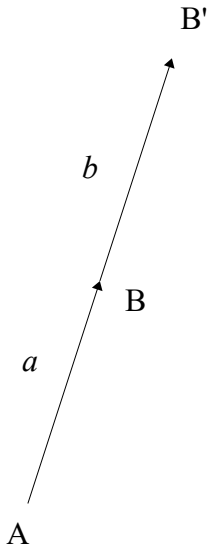
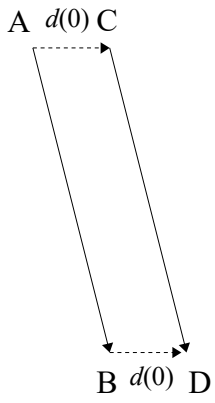


fig 6.3

300 "Conjugate Functions", 13-14.
301 "Conjugate Functions", 17.

It is thus possible to see that transposition implies *transference*, in Hamilton's sense – the "repeated transference" of a relation, the "continued application of one common mental step"; given two simple motifs, *X* and *Y*, where *X* is the pitches, A and B, and *Y* is the pitches, C and D, and where *Y* is the *transposition* of *X*, transposition implies that B – A = D – C. However, it is also possible to see that this is insufficient, as internal to almost any piece of music it would be possible to find many such purely arithmetic repetitions, many such relations between differences between pitches without this necessarily implying the experience of transposition, that this motif, *Y*, is motif *X heard elsewhere*. Rather, the experience of transposition implies not only repetition at the level of the differences internal to a sequence of pitches, internal to a motif, but, as a consequence of this repetition of internal difference, *a repetition at the level of the motif itself.* First, there is an experience of non-identity at the level of the points – motif *X* and *Y* are constituted by a different ordered set of pitches; "the points of *X* and *Y* are different". Second, there is an experience of identity at the level of the "intervallic structure", the differences internal to the motif and its transposition; *X* and *Y* "have the same intervallic structure". Third, as a consequence of the identity experienced at the level of the differences internal to the motif and its transposition, there is an experience of identity at the level of the motifs themselves; "*X* and *Y* are the same motif"; an experience of identity at the level of the part is *transferred to the whole*, we could say, where the "part" is a vectoral *relation*.

The formulations - "*X* and *Y* have the same intervallic structure, the same structure of differences" and "*X* and *Y* are the same motif" – are both expressions of *equivalence*, equivalence at both the level of the intervallic structure and at the level of the motif itself. In order for the motifs *X* and *Y* to be equivalent at the level of their points, however, it would be necessary that C – A and D – B both produce the difference *0*.



But this is obviously not the case; both C – A and D – B produce the difference, *+1*, as shown in *fig. 6.4*.

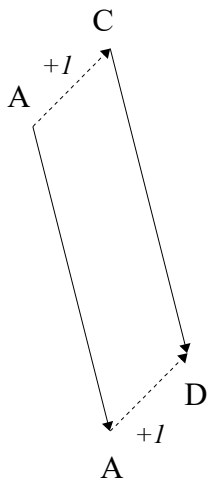


fig. 6.4

So, if equivalence is not to be situated at the level of the points, but at the level of the relations these points manifest, this implies that the equivalence relation that pertains to transposition is a relation that relates not points, but relations, that says, in effect, "this relation, *a*, is the same as this relation, *b*". Does such a relation exist?

Equivalence quotients

In the *Lectures on Quaternions*, Hamilton proposed exactly such a relation, a relation that relates not points, but the relation between points, not positions in space, but the directed distances – the *vectors* – that move "moveable points" between positions in space.[302] This relation between relations he called a *quotient*, for, if "vectors" were produced by the analysis by *subtraction* of one point with respect to another point, a "quotient" would be produced by the analysis by *division* of one *vector* with respect to another *vector*:

$$d_y/d_x = q$$

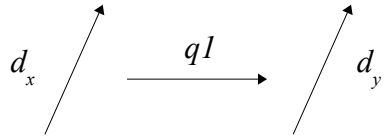
If the analysis by division of a vector, d_y, with respect to another vector, d_x, produced a quotient, q, in synthesis by multiplication, the quotient synthesised with respect to the vector, d_x, would produce the vector, d_y – would "move", we could say, transferring terms from Hamilton's description of synthesis by addition, a "moveable point" from d_x "in the direction of" d_y:

$$d_x \xrightarrow{q} d_y$$

So, if quotients relate relations, if quotients relate Hamiltonian vectors, or directed distances, is there an "equivalence quotient", a quotient that moves a "moveable point" from one vector, *a*, "in the direction of" the *same* vector, *b* - "in the direction of" the vector with the same distance and direction? Yes – the equivalence quotient is obviously quotient *1*, insofar as *1* is produced by the

302 Hamilton, *Lectures on Quaternions.*

division of some value with respect to itself – the value of some vector, *b*, with respect to *a*, another vector with the same value. *Q1* will thus, in synthesis by multiplication, "move a moveable point" from the vector *a* "in the direction of" a vector, *b*, will be the "same distance and direction".



And, in a sense, it also wasn't clear that Hamilton's formula – B – A = D – C – really was able to account for what is implied by the notion of *transference* – the *transference of a relation*, as he called it – for transference, in Hamilton's sense, implies not simply that it is possible to equate a difference here with a difference there, that this difference is equal to that difference, but that this difference has been "moved", has been "transported", *transferred*, from here to there. In this sense, it is possible to see that *q1* – the equivalence quotient – is the *vehicle*, the means of movement, the *agent of transference*, that will transport a relation from here to there.

It is also possible to see that transference in Hamilton's sense and transference in Stewart's sense come together in the notion of transposition; there is the experience of the transference of a relation, that a relation – a vector – is moved, *transferred*, elsewhere, to be realised by another set of points, and, as a consequence of the "something in common" at the level of the relation this Hamiltonian transference produces, there is the Stewartian "transference of a name" – we could imagine a little letter – "*a"* – transferred from one instance of a motif to the next, with the "quality in common", allowing such a shift, the vectoral relation both manifest.

From points to relations

To the extent that the notion of transposition is contingent on an experience of identity, of equivalence, at the level of the transposed idea itself – that, in the case of melodic transposition, a melody and its transposition are the *same melody* – it is thus possible to perceive that what is entailed in an experience of transposition is *a shift from points to relations*, from the points, A and B, to the relation, the vector, *d,* to the particular relation of coincidence or non-coincidence that separates one point from another. The consequences of this shift are crucial, for "the condition of identity" – what makes two motifs "the same motif" – is now to be situated at the level of the *relation* – at the level of the particular vectoral differences that separate one melodic point from another, and not at the level of the points themselves.

So, if transposition is the cause of veiling, the cause of the invisibility to which the title refers, and if transposition implies a shift *from points to relations* – that identity is to be situated at the level of relations rather than any points that manifest those relations, such that two fragments that share an intervallic structure are to be considered the same fragment, the "same motif" – what is the relation between the two? What is the relation between an effect of invisibility and the shift from points to relations that transposition implies?

3. Invisibility

Relations and invisibility

If the identity of the motif is contingent on the identity at the level of its internal, constitutive relations, and not on the identity of any points that would manifest this relation, the identity of the motif, what makes it the same motif, regardless of the differences at the level of the points that would manifest it, is thus a strange, immaterial substance, a relation floating free, irreducible to any points constituting its particular visibility. As such, the shift from points to relations implies that the identity of the motif, what makes it what it is, is *constitutively invisible*; it is nothing but a relation emerging invisibly – or better, perhaps, *inaudibly* – at the intersection of any two of its "punctual" appearances – visible, audible points without which it could not appear, could not be heard, but to whose audibility, whose visibility, it can also never be reduced. However, is this really enough to account for what is at stake in this experience of invisibility? Is it really enough to locate invisibility on the side of the relation, rather than the "visible" points that manifest that relation? For it is not simply that the shift from points to relations, from identity at the level of points to identity at the level of relations, is experienced at the level of the tonic relation itself – a shift from tonic points to tonic relations – but that this shift to relations produces a point-effect, a kind of *phantom tonic*, a phantom "point" that persists as "hidden", "invisible", haunting the space as the ghostly presence of a determinate endpoint to be discovered, to be unveiled.

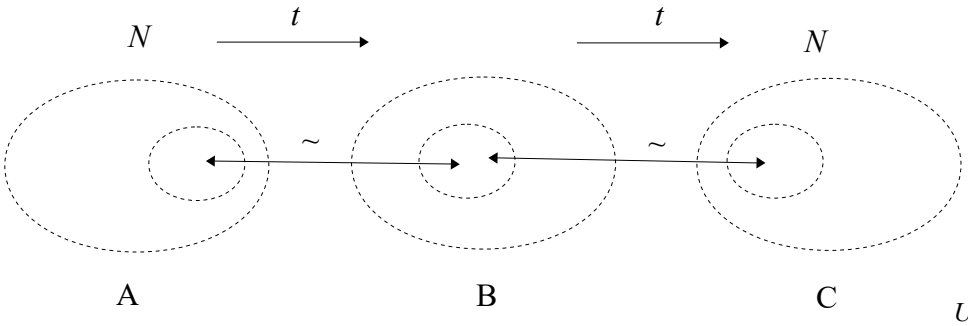
A lost or hidden object

"The search for the agreement of a set of phenomena", says Mill in a section of his *Logic* on abstraction, dealing with the formation of those general conceptions without which, he says, no induction could occur, "is in truth very similar to the search for a lost or hidden object". "At first", he says, "we place ourselves in a sufficiently commanding position, and cast our eyes around us, and if we see the object, it is well; if not, we ask ourselves mentally what are the places in which it may be hid, in order that we may there search for it: and so on, until we imagine the place where it really is".[303] The search for the general conception – the "general idea", or attribute, common to the whole class of things that share a general name – is marked by a certain loss, a privation, at the level of *sight* – the object, the point of agreement, we are looking for is lost to our gaze; in spite of our position of supremacy, of assumed control, of *command*, we search *blind*, the object – the general "idea" – receding from sight. However, if this is the case, if the search for the point of agreement constituting a set of phenomenon as a class, and which thus forms the "connotation" of the general name which names that class, is the search for something lost, something hidden from sight, something with respect to which our sight fails, with respect to which we are, in some sense, *blind*, what is the cause of this privation, what is the cause of our loss of sight, which coincides, as Mill implies, with a loss of supremacy, of command, in our attempts to order the world?

Of course, Mill is referring to a process of "observation" *prior* to the process of naming – one determines the quality in common between two objects, constituting them as of the same class and thus as bearing the same general class name. However, there is, perhaps, another answer, one

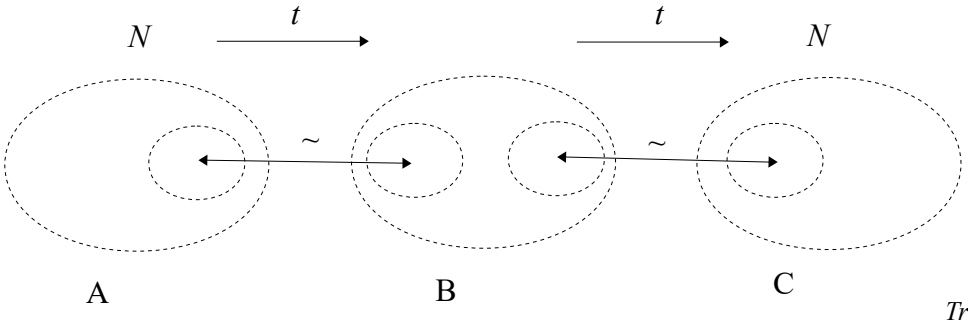
303 Mill, *System of Logic*, 433.

implied by Mill's distinction between two kinds of name, between one that is applied "univocally", and one that Mill, drawing directly on Dugald Stewart's theory of meaning shifts, calls "transitive" – a distinction directly correlative to the difference between the approach to meaning articulated by the Encyclopedists and the one articulated by "Stewart's law".[304] In the case of a *univocal application*, an equivalence (~) relates a "quality" or "attribute" of an "object", A, to a quality or attribute of the object B; the property of A and the property of B, in other words, are the "same property" – in Stewart's terms, there is a "quality in common" that allows the transference (*t*) of the name (*N*) from A to B. When that name is transferred from B to another object, C, this application is "univocal" insofar as the equivalence that relates the property in A to the property in B now relates the *same property* in B to a property in C. Given the transitivity that pertains to equivalence, this means that the property in A and C must also be related by that equivalence, that they are, in other words, the "same quality"; the application is *univocal.*[305]



Univocal application

In the case of a *transitive application*, however, an equivalence relates a property of A to a property of B, allowing the transference of the name from A to B, and an equivalence relates a property of B to a property of C, allowing the further transference of the name from B to C, but, in this instance, the quality in B to which A is related by means of an equivalence *is not the property in B to which the property in C is now related*.[306] There is a "gap", a break, "internal to the space of the 'object'" – the two properties internal to B are not related, in other words, by means of an equivalence – they are not the "same quality".



Transitive application

304 See page 40-41 of this thesis for an explanation of Stewart's theory.
305 *Logic*, 28.
306 *Logic*, 442.

The distinction between a *univocal* and *transitive* application is thus correlative to the distinction between two forms of *transference*, now in Hamilton's sense, two different forms of the "transference of a relation", the "repetition of a mental step", where the relation to be transferred, in this instance, is an *equivalence*. In both cases, the equivalence that relates A to B is transferred to relate B to C, but in the case of a univocal application, the "analogy" constituted by this transference is *continued*, in Hamilton's terms – the "mean" points (properties) internal to B coincide, whereas, in a transitive application, they do not (see page 96-97 of this thesis).

At the heart of "Stewart's law", which makes such transitive applications possible, there is thus exactly the shift from points to relations we have just seen in the case of transposition. In the work of the Encyclopedists, of which Stewart's work constitutes a critique, there is an assumption that an identity at the level of the name must reflect an identity at the level of the properties that make possible the transference of that name, but with Stewart, all that is needed to allow the "transference of a name" from the object A to C is that the *relation* (the equivalence) relating some property of an object, A, to some property of an object, B, is *transferred* (in Hamilton's sense) so as to relate some property of B to some property of C – it is the repetition of the relation that matters, not the repetition of the point. There is a shift, in other words, from the identity of points – of properties – to the identity of relations – equivalences – that relate those points.

Transference performs a veiling function

We could say, then, that *transference*, like transposition – the transference of a relation between properties – *performs a veiling function*. It is the shift from points to relations that transference implies that produces the effect of veiling, causing the search for an object that, in a sense, is nothing but a phantom produced by a misperception regarding the nature of names and naming, the misperception that an identity at the level of the signifier must imply an identity at the level of the property that constitute the "connotation" of such a signifier – a property which, veiled by transference, is thus now experienced as "lost" or "hidden".

4. Free direction

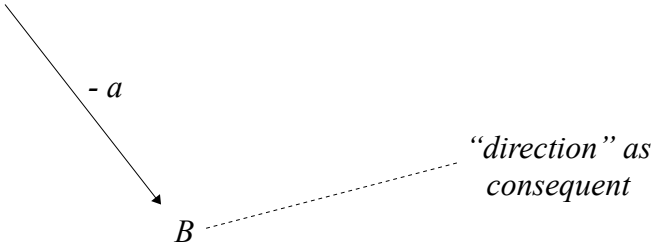
So what of the question of *direction*? "The melodic direction is pretty free", says Ornette in his discussion with Hentoff for the liner notes to *Something Else*, but what is "direction", melodic or otherwise, and what would it mean for it to be "free"? And if the "melodic direction" that pertains to this piece in which there is an effect of invisibility, of veiling, is "pretty free", what is the relation, if any, between the two? What is the relation between "free direction" and "invisibility", including, perhaps, the relation between the movement of transposition we have situated as its cause?

Three directions

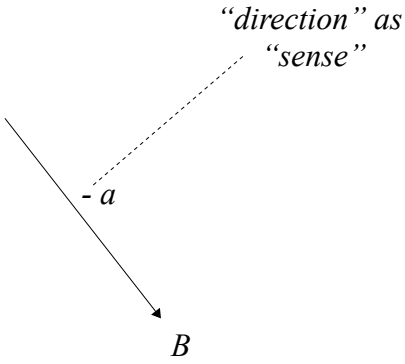
First, as a prelude to our discussion of "melodic direction", let us propose a simple "melodic vector". As with a tonic vector, a melodic vector would be produced by means of Hamiltonian analysis by subtraction, so as to produce a "directed distance" between melodic points, without any

necessary relation to the tonic vectors discussed earlier. Our vectors (melodic, tonic etc.) imply "direction", we might say, in three distinct senses;

1) First, there is direction as *endpoint* – "where one goes" – the point, B, "in the direction of which" the vector moves "a moveable point". In this sense, at the level of the order that pertains to vectoral movement, "direction" is on the side of *consequence*, the point that follows at the level of the order this movement implies.

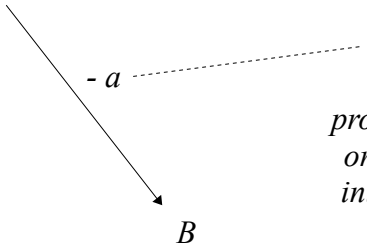


2) Second, there is "direction" at the level of "sense"[307] – at the level, that is, of whether the vector moves "a moveable point" in the direction of a consequent point, B, *greater than* or *less than* the antecedent point, A, of that movement. This "sense direction" is the way in which Hamiltonian vectors are *directed* distances, and is implied in our vectors in one-dimensional pitch space by the signs for positive (+) and negative (-).



3) Third, there is "direction" at the level of "angle of inclination", which, in two dimensions, is the effect of the interrelation of distances on each axis.

307 "Sense", in a mathematical sense, is defined as "the 'direction' of an inequality, i.e., whether it signifies 'greater than' or 'less than'. Penguin Dictionary of Mathematics, p.291



3) "direction" as angle of inclination, produced when there are two or more dimensions, by the interrelation of distances, a and b.

Of course, interval vectors in pitch space require only *one* dimension, and thus there is no "angle" that pertains to them, in this sense. However, we can "artificially" produce such an angle for one-dimensional vectors by introducing a difference on the *x* axis that is unit (*U*) for all vectors on the *y* axis (or vice versa). Whilst the angles thus produced are nothing but the effect of the relation to the arbitrarily-chosen difference on the *x* axis, these angles are comparable insofar as this difference is unit – that is, insofar as it is the same for every vector. Now two vectors with the same distance and direction will appear as parallel, as with the two vectors with the value *+2* in *fig. 6.5.*

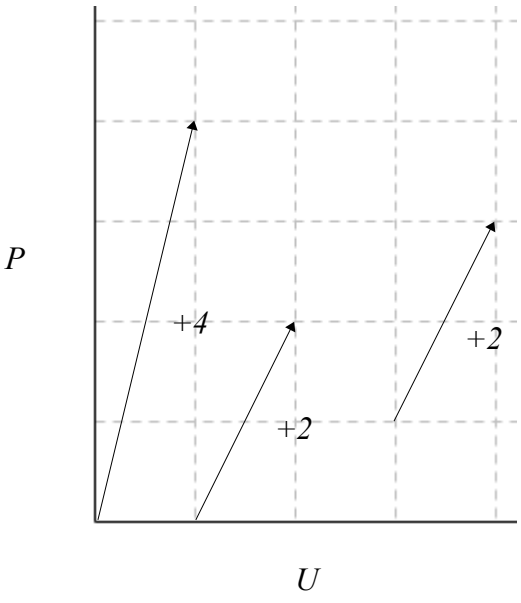


fig. 6.5

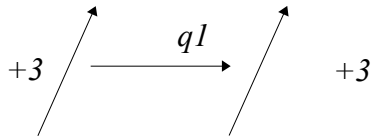
Now, given these different senses of "direction", and given our new *melodic* vectors, what would it mean for the direction that pertains to a melody to be "free" – what, in other words, is a "free direction"?

Free vectors

In physics, a vector is sometimes defined as the representation of an entity possessing both "magnitude" (or size) and direction, but there is within this field a further distinction, a further

difference, between two kinds of vectors – or between two different ways of thinking about the *identity* of vectors – between vectors that are, on the one hand, *bound* – "anchored" – and those that are *free.*[308] If a bound vector is anchored to a particular location, to a particular position in space, to be considered only in relation to that position, the free vector is independent of any location, its identity contingent not on its being any particular where, but rather on its magnitude and direction - any vector with the same magnitude and direction, in other words, *can be considered the same vector.* In this sense, we could say, a vector is "free", rather than "bound", *insofar as it is free of points*, insofar, that is, as *its identity is free of any points that would manifest it*, binding its identity to any specific position in space. This shift from points to relations, from the identity of the points to the identity at the level of the vectoral relations these points manifest, is thus exactly the shift we perceived at the heart of the phenomena of transposition – that not only that the vector, the "directed distance" between points is the same, that they are equivalent, but that, as a consequence of this experience of equivalence, of being the same, there is an experience of identity at the level of the motif itself. As such, transposition implies exactly the "freedom" of the *free vector*; it too is a "free identity", a *free relation*, its identity, its being the same, not contingent on its realisation by any specific set of points.

We can use Hamilton's *q1* to show the relation between two vectors with the same "magnitude" (distance, in Hamilton's instance) and "direction", for multiplying the distance and direction of any vector by 1 will obviously produce a vector with the same distance and direction. In a sense, we could say, "*q1*" *means* "the same distance and direction", insofar as, for instance, *+3* multiplied by (quotient) 1 equals *+3*, where "+" indicates direction and "3" indicates distance.



It is then possible to see that the "freedom" of the free vector does not pertain to "direction" as "sense" or "angle of inclination"; *q1* means that direction in these senses is *not free* – that any vector produced by means of (multiplication by) *q1* is bound to re-produce, in other words, whatever direction (as "sense" and "angle of inclination") pertain to the vector to which *q1* relates them. The "freedom" of free vectors relates, rather, to direction as *consequence*, to the level of "the point in the direction of which I move". *The vector is free of any determinate "consequent"*, for there is nothing at the level of *q1*, just as there is nothing in the conditions governing the identity of a free vector, that would determine "where" the vector, where this directed distance, is to "go", where it is "put" in space – it can "go" *anywhere*, as long as the points that constitute this "anywhere" manifest that specific directed distance, as long, we could say, as it is "parallel" (where "parallel" vectors, in this instance, also have the same "sense").

308 Fleisch, *Guide to Vectors and Tensors*, 2.

Free

In the liner notes to *Change of the Century*, his first album with the famous group of Charlie Haden, Billy Higgins and Don Cherry, Ornette wrote that the title to one of the tunes on the album, "Free", was "well explained by the title";

> Our *free* group improvising is well-documented here. Each member goes his own way and still adds tellingly to the group endeavour. There was no predetermined chordal or time pattern. I think we got a spontaneous free-wheeling thing going here.[309]

However, if we look closely at the composed melody for this piece, another interpretation, closer to the one we have been pursuing in relation to "Invisible", presents itself. For it would be possible to hear in this tune the movement we heard in "Invisible", to hear, in other words, in the ascending sequence of notes that starts with the Db, a fragment of the melody already heard, but transposed, as in “Invisible”, up a semitone. *Fig. 6.6* shows the melody to “Free”, with durations given as unit. The collection of notes, *V*, is represented as a transposition of *U*, with the transposition of *W* “deleted” from *V*, and with the order of *U* reversed (inverted on the temporal axis). *Fig. 6.7* shows the two fragments as sequences of vectors with *x* and *y* their initial points, where the sequence ending with *y* is reversed. Now the relation between *U* and *V* is *+1*, and the relation between their vectoral relations can be expressed as *q1*. (This rather complex explanation is clearer when the melody is heard).

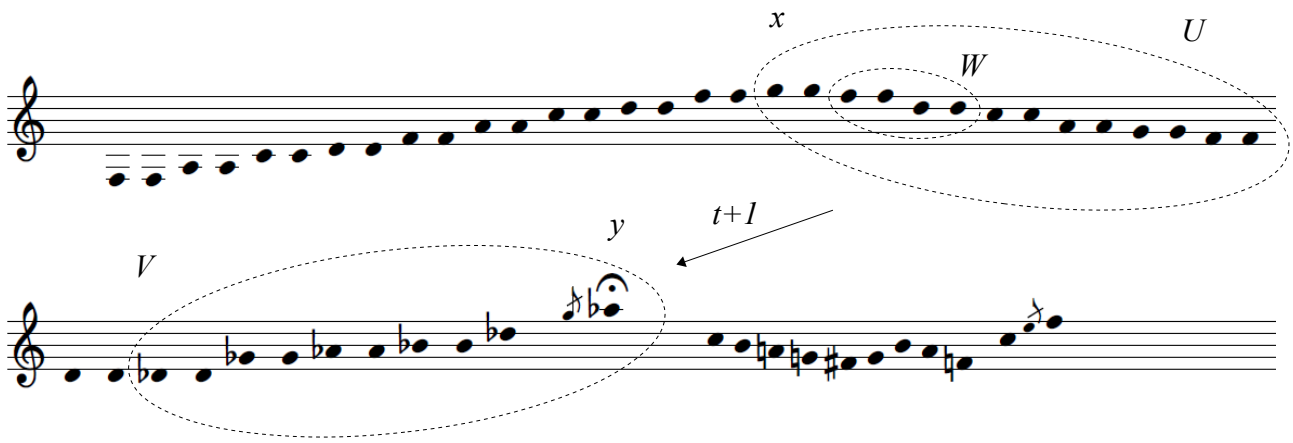


Fig. 6.6

309 Coleman, liner notes to *Change of the Century.*

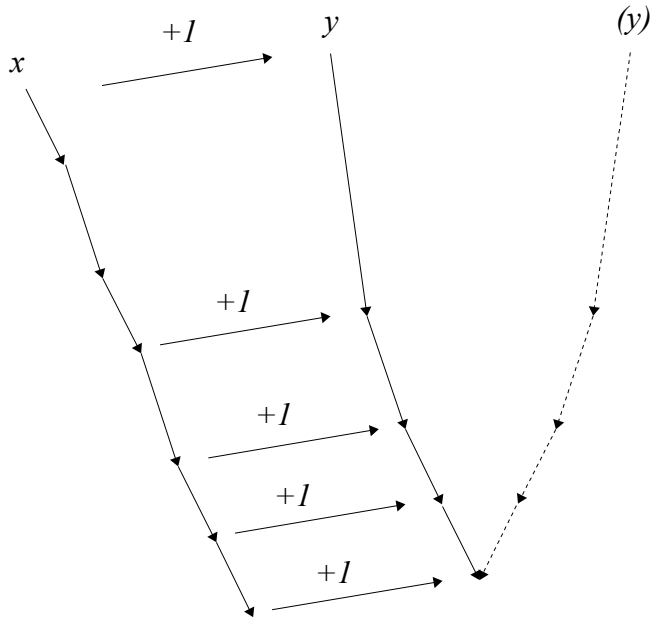


fig. 6.7

5. What does it mean to follow?

If "to follow" means to "go where I go", as we have now stated many times, what does it mean to follow in a transpositional space of "free relations", with their implied "free directions"? If we can represent the relation between manifestations of a "free relation" by means of *q1*, it is possible to see that the consequent "where one goes", the end "point" in the direction of which *q1* moves a moveable point, *is itself a relation – q1* moves "a moveable point" from a relation to the same vectoral *relation.* In terms of Hamiltonian analysis and synthesis, analysis by division implies the analysis of the vectoral relation that pertain to determinate motifs – of the vector "internal" to the motif *Y*, as manifest by two determinate pitches, C and D, with respect to the vector "internal" to the motif *X*, as manifest by two determinate pitches, A and B, as shown in *fig. 6.8*.

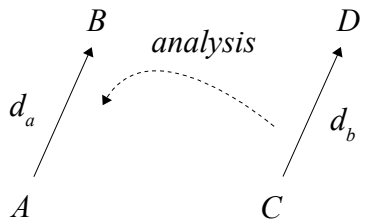


fig. 6.8

In synthesis by multiplication, however, *q1*, produced by means of this analysis, "moves" "a moveable relation" "in the direction of" *another relation,* as shown in *fig. 6.9*, without *regard to which points realise this relation* – the vector, in other words, can "go" anywhere, can be realised by

any points, so long as the relation between the relations realised is *q1*; the vector is free precisely insofar as it is *free of points.*

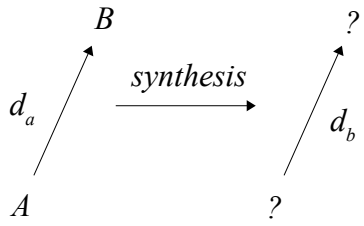


fig. 6.9

The shift from points to relations that characterises both transposition and free vectors thus also affects the question of what it means to follow, to "go where I go", for, if in the prior chapter, to "go where I go" is to go to a common point – the point of tonic convergence – now to "go where I go" is to go to a common *relation* – now the relation constitutes the point of convergence, the "where" to which both "you" and "I" go, *regardless of the points that manifest that relation.* However, if this is the case, if there is no indication at the level of quotient synthesis as to "where" a relation is to "go", "where" – by which points – it is to be realised, any such indication, any law governing the "where" of realisation must be given in addition to quotient synthesis, must, in other words, be given by means of a separate law. Does such a law exist in Ornette's discourse?

6. A law governing manifestations?

That's it, that's it!

The musician Ellis Marsalis recalls an experience he and Harold Battiste both had on separate occasions when playing with Ornette – an experience that bears on this question regarding free directions, on the question of where, given the freedom that pertains to a free direction, a transposition is to "go", by means of which specific pitches a transposition is to be realised. Both were playing piano, he says;

> ...and I started a cycle of 7th chords, just moving 'em up the scale, up the piano chromatically, and Ornette said, 'That's it! That's it! Keep playing that!... I didn't really understand what I was doing, it's just that whatever it was, Ornette related to it. Eventually it kind of disturbed Edward because I had forsaken the rhythmic responsibilities of the group in favour of trying to play harmonically what Ornette was hearing and trying to hear myself what was going on.[310]

Both *fig. 6.10* and *6.11* show the beginning of the "cycle" described by Marsalis, with the 7th chord, Db7, (chosen arbitrarily), "moving up the scale chromatically" – *+1*. *Fig. 6.5* shows these two

310 Litweiler, *A Harmolodic Life*, 51.

chords as tonic-oriented spaces, with each of the points of the Db7 chord related to the common point, Db, and each of the points of the D7 chord related to the common point, D.

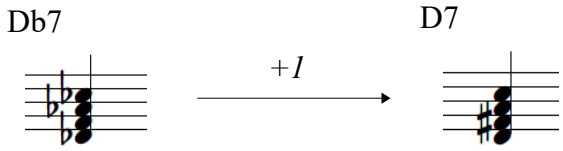


fig. 6.10

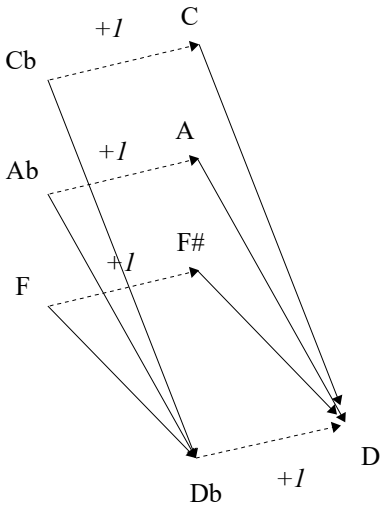
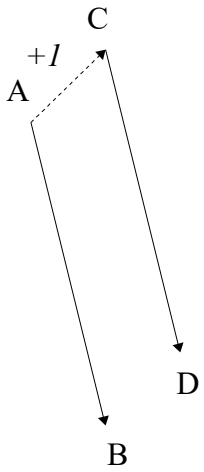


fig. 6.11

“That's it! That's it”, says Ornette, but what is “that”? What is “that” such that “that” is “it”, the “that” to which, whatever it was, Ornette related, that seemed, for Ornette, to satisfy some desire about what one is to keep playing? Is “that” the specific *chord*, the 7th, or the specific *movement*, *+1*, such that the space that was heard here is now “moved”, as Marsalis suggests, elsewhere, manifest “up”, chromatically from where it was? Or is it both, or neither, something else?

If each of the points of this “cycle” is a transposition, in the sense we have been discussing, where an experience of equivalence at the level of internal differences is then experienced as an equivalence at the level of the space itself – from, “the differences internal to this space are the same”, to, “this is the same space, the same chord, heard – *moved* – elsewhere” – then *+1* marks a difference between manifestations, between realisations of relations are that *free*. In this sense, *+1* is an answer to the question of “where” free relations are to “go”, which points will manifest them, which we could formulate thus; wherever the relations are first manifest, wherever the antecedent manifestation, the consequent manifestation will be *+1* “up” “chromatically”, manifest a semitone away, “up” from the antecedent.



Where this is repeated for each new antecedent, where, that is, each new consequent itself becomes an antecedent, a "cycle" of manifestations appears."That", in this sense, could thus be understood in the following way; whatever the movement relating an initial antecedent and consequent manifestation, *X* and *Y*, the subsequent movements will be equivalent. As in the situation Marsalis describes, if the initial movement was *+1*, so were the subsequent movements, thus forming an equivalence "cycle" of manifestations, each related by an equivalent movement. Such a law will produce a cycle of manifestations, as in the opening to "Invisible", shown in *fig. 6.12* and *6.13*.

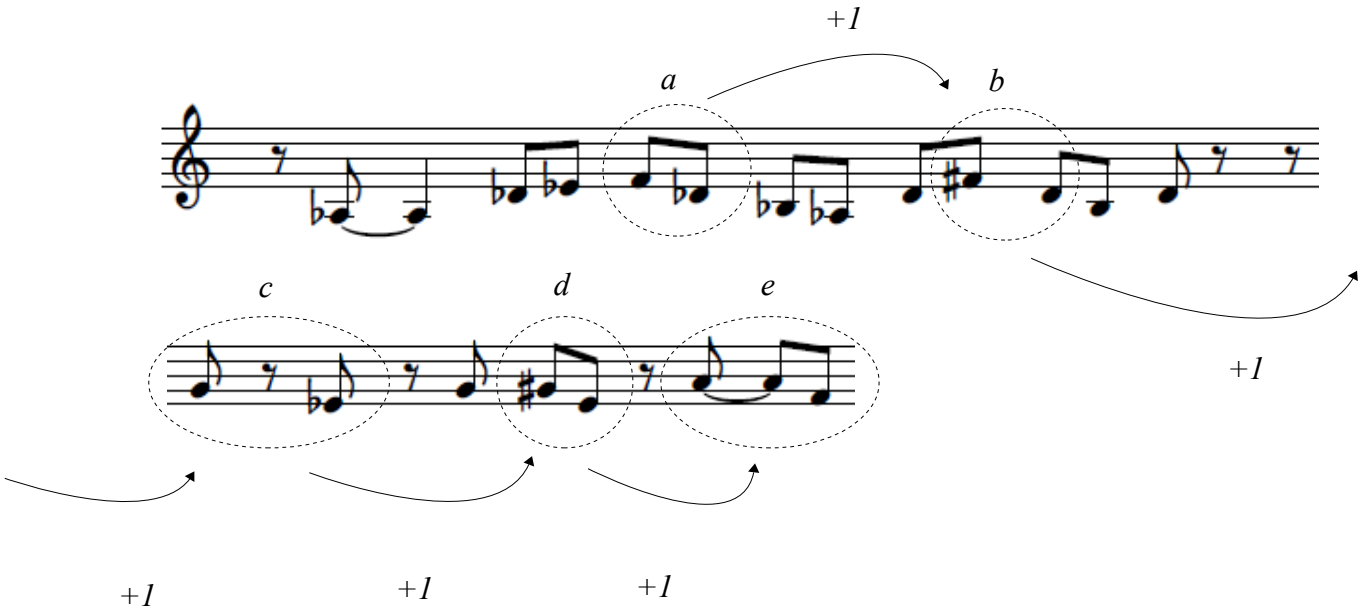


fig. 6.12

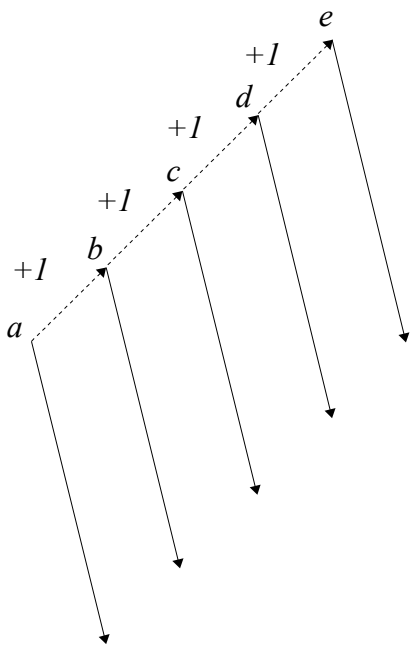


fig. 6.13

Fig. 6.12 shows the opening to “Invisible”, with *a*, *b*, *c*, and *d* the initial points (pitches) of the manifestation of a common vectoral relation, *-4*. The relation between the initial points of each manifestation can be represented as a difference, *+1*, as shown in *fig. 6.13*.

However, it is clear that this “law” is far too limited, for there are many moments in Ornette's music that might imply the manifestation of free relations, but where the appearance of such manifestation seems to be governed by nothing so straightforward as *+1*. For instance, what might be considered the “turnaround” section to Ornette's famous melody, “Turnaround”, which appears on Ornette's 1959 album, *Tomorrow is the Question*, the relation between the manifestations of the set of relations (*-4*, *-1*, *-2*) shifts from *+1* to *+2*, as shown in *fig. 6.14* and *6.15*, where *a*, *b*, *c* and *d* now mark the initial points of the sequence of manifestations.

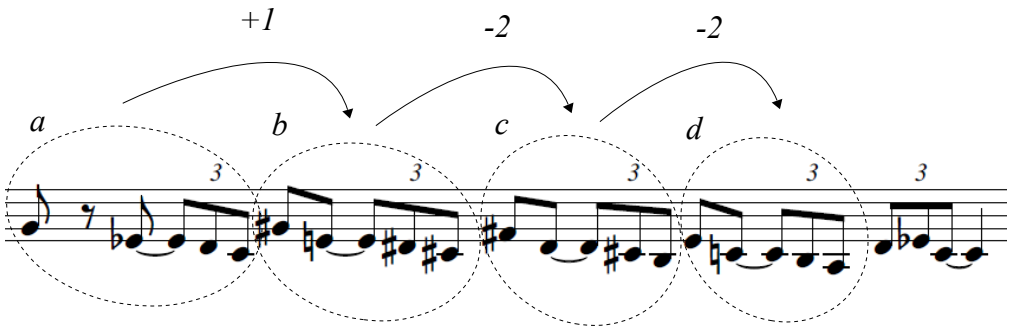


fig. 6.14

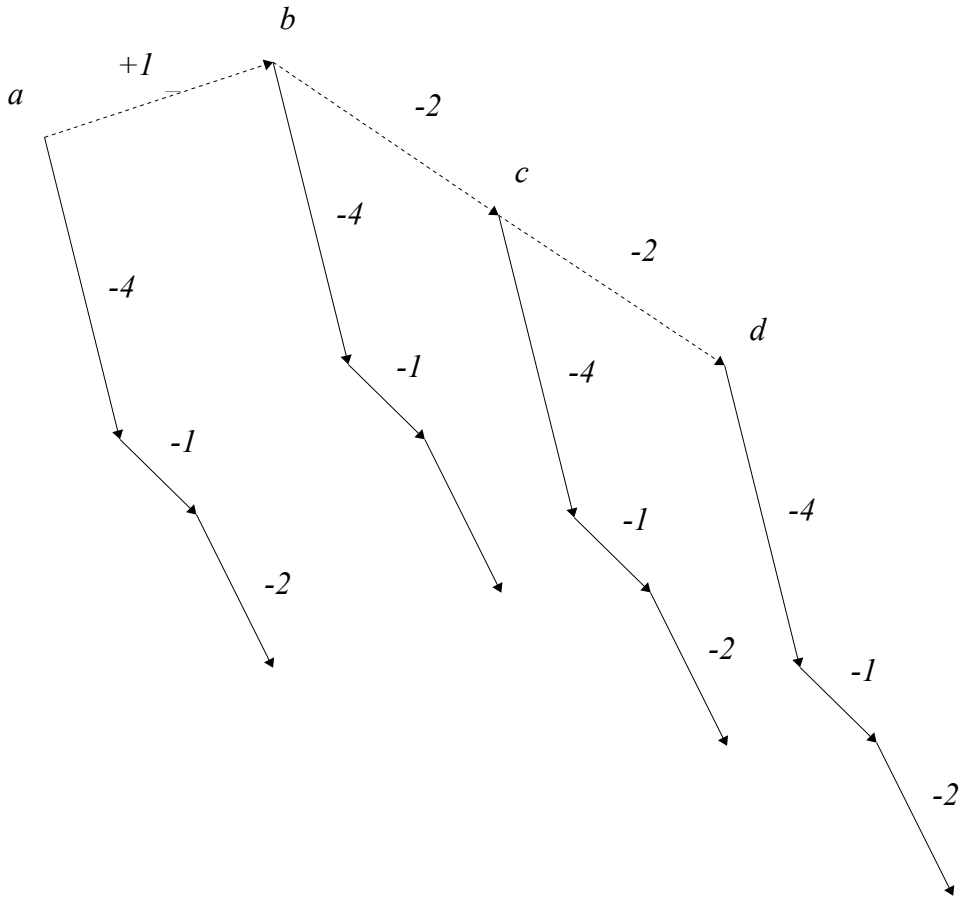


fig. 6.15

The opening of *W.R.U.*, from the 1960 album, "Ornette!", is a more complex instance, for, whilst a chromatic movement, *+1*, can be discerned in the sequence, F, F#, G, G#, A, A# (marked in *fig. 6.16* by curved, dashed arrows), insofar as this fragment manifests the ascending interval, *+8*, where the initial points of these manifestations are *a*, *b* and *c*, the relation between these points is not *+1* – whilst *b* to *c* is *+1*, *a* to *b* is *+2*, as shown in *fig. 6.17*.

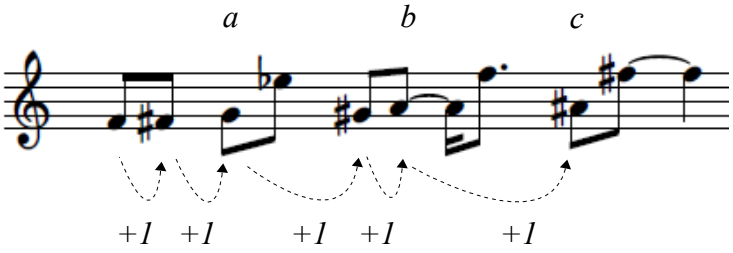


fig. 6.16

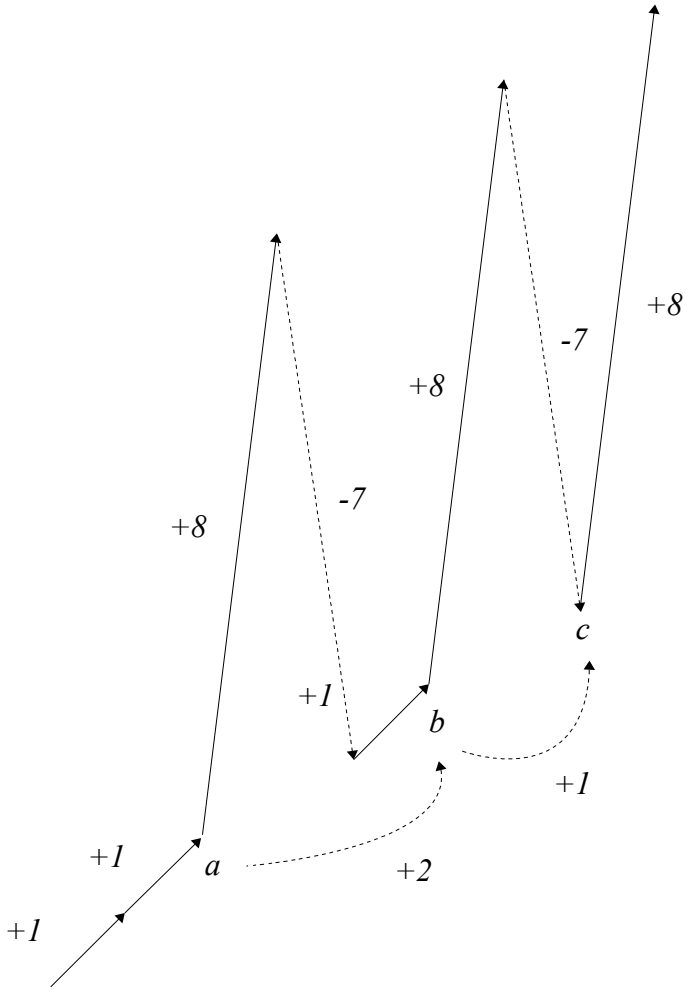
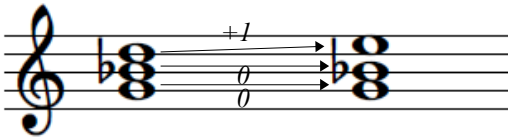


fig. 6.17

Only a half-step away

Let us consider another possibility, one implied by something recounted by the guitarist, Kenny Wessel, who appeared on Ornette's *Tone Dialling*, released in 1995, something Ornette had said to him about the relationship between chords. “All chords”, he said, “are only a half-step away from any other chord” – a statement Wessel linked to the voice leading that would take you from the notes of a G minor triad – G, Bb, D – to the notes of an Eb triad – Eb, G, Bb – a shift entailing the movement of only one note – D – by a half-step (*+1*) to Eb.[311]



311 Wessel in private seminar.

It does not appear, however, that this is a satisfactory explanation, for the simple reason there exist many chords – say, a C major triad and an F# major triad – that cannot be related even by voice-leading that is simply stepwise, let alone by half-step (if by "stepwise", we mean "by one or two semitones"), as proved in *fig. 6.18*, which shows the possible relations between different inversions of C major and F#major triads. None can be linked by purely semitone movement (or less).

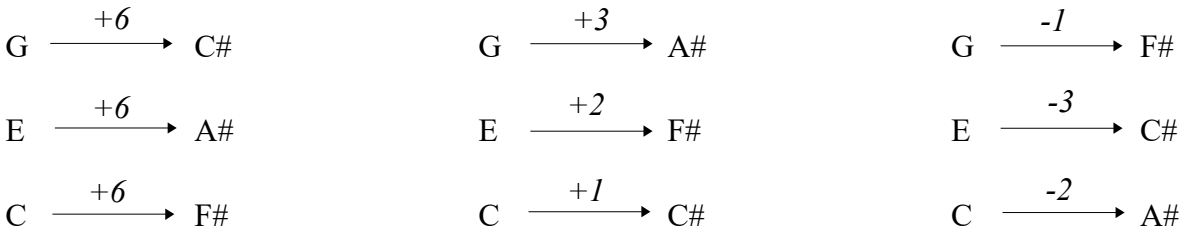


fig. 6.18

We instead propose the following, given in terms of neighbourhoods in a chromatic pitch space (see pages 62-4): with A as chromatic pitch space, at least one point of any triad is contained in a pitch space neighbourhood of a point of any other triad, where $\varrho < 2$ (semitones). This is illustrated in *fig. 6.19*, where the points of a C major triad are shown as solid points in chromatic pitch space, and the points of a F# major triad are shown as hollow points. With U_C, U_E and U_G as neighbourhoods of the points of a C major triad, at least one of the neighbourhoods of these points contains a point of the F# major triad. (In fact, both U_C and U_G contain points of a F# major triad.)

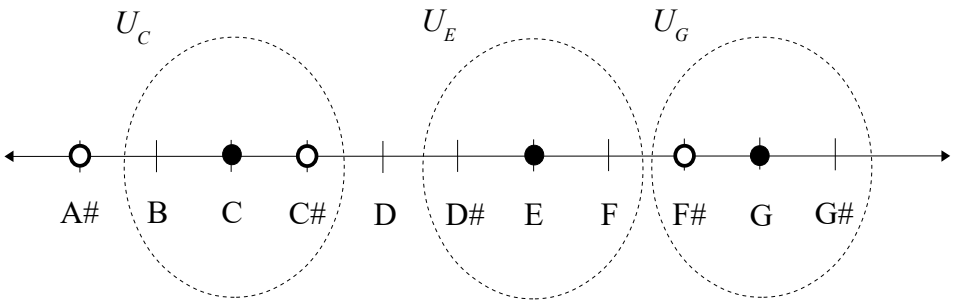


fig. 6.19

This is true for all major, minor and diminished triads, as no major, minor, diminished or augmented triads can be created from the complement of such neighbourhoods of the points of those chords. The exception is an augmented triad, where augmented triads can be thus created. (For instance, A#/Bb, D and F#/Gb augmented triads can be created from the complement of the neighbourhoods of the points of a C augmented triad.)

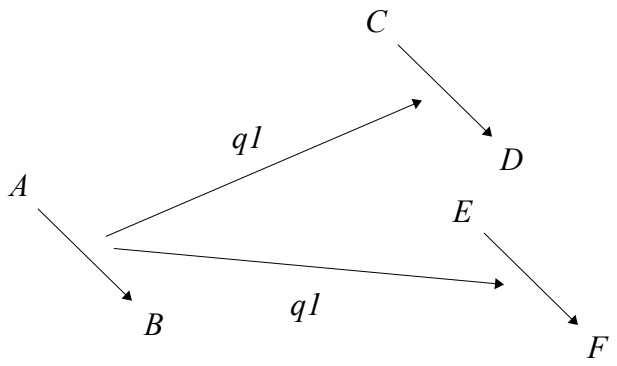
With respect to the question of antecedent and consequent manifestation of free relations, Ornette's thesis could then be reformulated thus; the neighbourhood of any point of any manifestation of any chord contains a point of any manifestation of any other chord. However, by generalising both to spaces other than chords and to neighbourhoods of a point other than "spherical neighbourhoods" with a determinate "radius", we could further reformulate this thesis in terms of a general answer to the question of "where to go" with respect to free relations, of "where" they are to be manifest; a relation can manifest, we could say, *anywhere where any point of that manifestation is contained in the neighbourhood of any point of a prior manifestation*.

7. What does it mean to follow – revisited

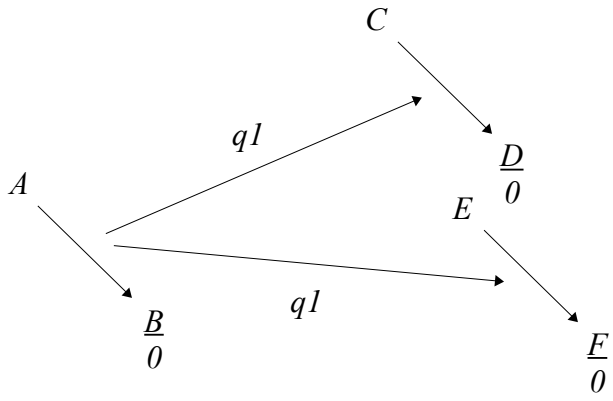
In the previous chapter, we spoke of what it means to follow in terms of *tonics* and spaces with a tonic orientation. To "go where I go" in such a space was to go to the tonic, though, as we have discussed, the notion of "tonic", as "point of convergence", already implies that, insofar as we both play the same space, and that space is a space with a tonic orientation, "you" will go where "I" goes - the notion of tonic already implies, in other words, that no matter where "you" and "I" in such a space, they are always going, converging to a common (tonic) point.

If the tonic offered us something in common, a point that was shared and in the direction of which both "you" and "I" moved, the shift from points to relations represented by both transposition and free vectors disrupts this commonality, producing a correlative shift at the level of where I go. Now "where I go" – the point in the direction of which I move – is not a point but *a relation between points*, with no necessary implication of "where" – of which points, in other words, are to manifest that relation.

However, if this is the case, if the shift from points to relations entails a shift at the level of "where", of the endpoint of my movement, from "where I go" as point, to "where I go" as relation, without any implication of which points would manifest that relation, and if there is, correlative to the identity of relations, the experience of identity at the level of the points that manifest those relations – as with a motif and its transposition, considered as the "same motif – this implies that "you" and "I" go to the same "where" – "you" goes where "I" goes – *even if, at the level of the points, there is a gap*, even if, at the level of the points, in other words, "you" is somewhere other than "I". From *AB*, "you" could go to *CD* and "I" could go to *EF*, even if $C \neq E$ and $D \neq F$.



If we conceive these vectors as tonic vectors, as in the previous chapter, then it is possible to see that “you” goes from C to D and “I” goes from distinct pitches E to F, with D and F both mapped to tonic-as-origin coordinates, then “you” goes where “I” goes at the level of the coordinate, even though there is a gap, a non-coincidence, a *non-convergence*, at the level of the points coordinated to that coordinate – exactly the split we discerned at the end of the prior chapter.



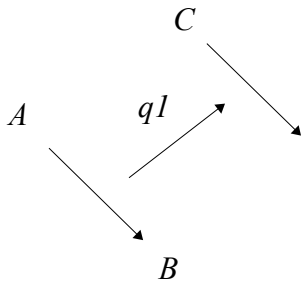
In this sense, it would be possible to draw in our prior discussion of *knowledge*, of “knowing” with respect to “where to go”, for if, in our prior chapter, there was a split at the level of the distinction between coordinate and coordinated, between knowing the coordinate and knowing the point coordinated to that coordinate, then here we have a correlative split between knowledge at the level of the *relation* and knowledge at the level of the points that are to manifest that relation. The shift from points to relations is thus, we could say, transposed into the dimension of knowledge; even if one “knows” the relation, this knowledge does not imply knowledge at the level of the points which are to manifest that relation.

Perhaps there is, we thought, to be discerned in Ornette's discourse, the allusion to another law, another direction, regarding where such “free relations” are to go, which points are to manifest them. And in the words of one of Ornette's collaborators we discerned the possibility of a law to be given in terms of neighbourhoods – a manifestation can go anywhere, we said, where any point of that manifestation is contained in the neighbourhood of any point of a prior manifestation. However, given the sheer inclusivity of this “law” in relation to chords specifically, *perhaps it is simply another way of saying “anywhere”*, with our account of neighbourhoods simply suggesting that, no matter where one manifestation is, no matter what points manifest it, all other possible manifestations are close by – each, in fact, is (almost) as close as any other. The only solution, again, is to *leap*, contingently electing points as known, so as to manifest the known relation.

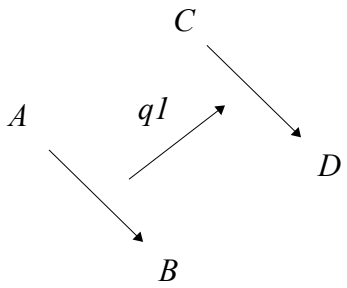
And perhaps, in our search for such a “law”, we had ourselves been drawn into the search for the phantom we had discovered haunting our transpositional structures, the effect of a point – a *point-effect* – “hidden”, made invisible by, the shift from points to relations characterising transposition

and the *free relation*, the "free direction", it implies. In this sense, if "to follow" means "to go where I go", and if this "where" is the tonic, the relation to which will also situate me, tell me where I am, then the question of what it means to follow is itself haunted by this phantom, it is itself in danger of being drawn into the search for an impossible endpoint, a point whose hiddenness, whose invisibility, is, in one sense, nothing but a misperception regarding its relationality, its *freedom*, and for which reason its location will forever be impossible to uncover.

However, to this notion of "freedom", there is another, final detail to add, for with this subtle shift we have discerned at the heart of "free relations" in transpositional space, from points to relations, from the pitch to the vectoral relation relating points, an even stronger bind is induced, an even stronger necessity binding one point to another. For as soon as an antecedent point (C) is chosen to manifest a "free relation", as soon, that is, as one antecedent point (C) is experienced as "transposing" another antecedent point (A):



this necessarily induces the fixing, the binding of its consequent, it necessarily induces the fixing of *what follows* with respect to *what leads*, of *where I goes* with respect to *where I goes from*.



What emerges, then, in the movement from relations to manifestations, is a kind of *direction effect*, an *effect of direction*, of *what follows*, with the relation-as-vehicle propelling, "vectoring", "vehicling", the moveable point, by means of its inner necessities, in the direction of another *determinate* point. Necessity emerges from contingency, imperative from freedom, "somewhere" from "anywhere". "Anywhere", that is, *as long as its "parallel".*

Closing remarks

So, if in this chapter we have discerned a shift from points to relations, with effects at the level of veiling, of invisibility, as well as at the level of what follows, of where to go with respect to some antecedent, we turn now to what appears as a movement in the inverse direction; from *points to relations* now appears as the inverse movement *from relations to points*, from the being of a point with respect to another point, to the being of the point itself, apparently without respect to any other point – a shift that has something to do, it seems, with a relation to women.

VII. Lonely Woman: solitude relations

1. Introduction

Ornette met the French philosopher, Jacques Derrida, in Paris in 1997, a meeting that took place on Derrida's initiative and in the presence of the film and music critic, Thierry Jousse, working for the French music journal, *Inrockuptibles*. It is not clear how much Ornette knew about Derrida's work prior to the meeting, but the inverse question has a clearer answer – Derrida knew Ornette's work and was, it seems, an admirer.[312] Ornette and Derrida spoke for many hours, Derrida's intellectual orientation introducing a conceptual clarity to both the questions Ornette was asked, as well as the answers Ornette was able to give in response. They spoke of many things, finding many points of common ground, particularly in relation to the question of language, a question that interested Ornette very much. However, in the course of this discussion, perhaps prompted by things Ornette had said in moments of their discussion not printed in *Inrockuptibles*, Derrida asked Ornette about women, and in particular about the relation between Ornette's music and his relation to women. “Pensez-vous que votre écriture musicale a fondamentalement quelque chose à voir avec votre rapport à la femme?”, asked Derrida, to which Ornette offered the following response:

> Avant d'être connu en tant que musicien, quand je travaillais dans un grand magasin, un jour, pendant ma pause déjeuner, je suis arrivé dans une galerie où quelqu'un avait peint une femme blanche très riche qui avait absolument tout ce qu'on peut désirer dans la vie, et elle avait l'expression la plus solitaire du monde. Je n'avais jamais été confronté à une telle solitude, et quand je suis rentré chez moi, j'ai écrit un morceau que j'ai appelé *Lonely woman*.

Of course, this conversation was actually conducted in English,[313] and translated into French for publication in *Inrockuptibles.* Let us nonetheless turn for a moment to the English *Genre* translation (of the French translation), made by Timothy Morton, which reads as follows:

> [Derrida]: Do you think that your musical writing has something fundamental to do with your relation to women?
>
> [Ornette]: “Before becoming known as a musician, when I worked in a big department store, one day, during my lunch break, I came across a gallery where someone had painted a very rich white woman who had absolutely everything that you could desire in life, and she had the most solitary expression in the world. I had never been confronted with such solitude, and when I got back home, I wrote a piece that I called "Lonely Woman.”

In an interview given in 2007, echoing comments he had made elsewhere regarding “sound medicine”,[314] Ornette related the question of loneliness to cure, to “healing”, by linking loneliness to *solitude*, as its correlative condition, as the condition from which one suffers when one is lonely. “My real concern for the things I would like to perfect in music”, says Ornette, “is to heal the

312 Jousse, in conversation with the author.
313 See our explanation of this process on pages 68-69.
314 Coleman, “Jazz Conversations with Eric Jackson”.

suffering and the pain and...", hesitating, searching for the right words, "what [do] they call the...when you are lonely", he asked the interviewer? "Solitude", was the response. "Yeah", said Ornette, "*solitude*".[315]

A space of solitude

What Ornette describes to Derrida is thus an experience, to which his piece, "Lonely Woman" – one not at all insignificant in the history of music, described by him elsewhere as the first piece he recorded that was "harmolodic", the neologism he coined to name his approach – is a response.[316] This *confrontation* (confronté, says the French Ornette), with solitude, with an "expression" that is also an expression of solitude – a singular expression of the woman's being-sole – is the confrontation with a woman who had absolutely everything it would be possible to desire in life, with a woman in whom, it seems, nothing but a lack is lacking.

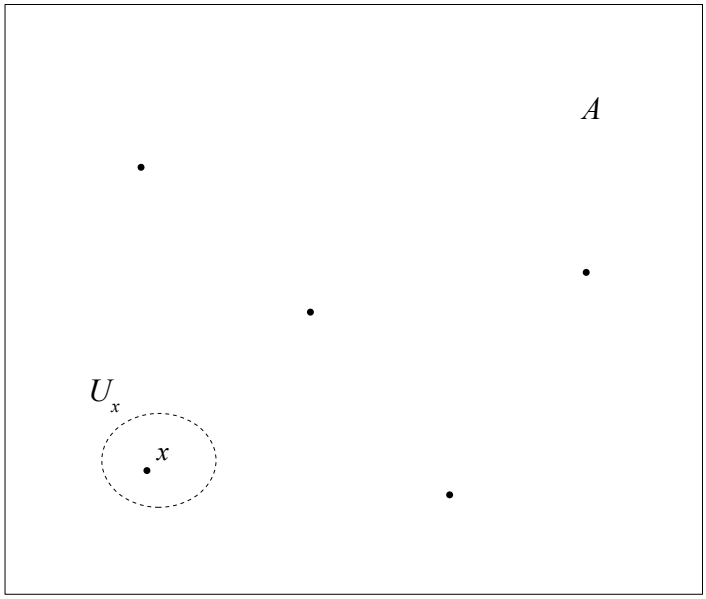
If we listen closely to this account Ornette gives of his experience, it is possible to discern in this "et" – *and – and* she had such an expression of solitude – where one might expect a "mais" – *but* – a woman who had absolutely everything, *but* she was lonely – something that links this having everything to solitude in something other than a relation of negation, as if there were another link between this solitude Ornette had encountered and the *everything* it would seem this woman possessed at the level of what it would be possible for her to desire. Let us draw in another English expression here, one that has now perhaps lost some of its resonance, but of which it would be possible to hear in this "solitude" an echo – *feme sole* – an expression for which one dictionary simply offers the sense, *unmarried woman,* but for which an earlier edition evokes the possibility of something else in this confrontation Ornette describes with solitude, with this woman who had everything one could desire in life, *and* who had such an expression of solitude – *feme sole* as not only a *spinster* or *widow*, but *feme sole* as a woman *entirely independent of her husband as regards property*.[317] Is there not something of the *feme sole* in this woman Ornette has confronted, who seems to lack nothing at the level of property, at the level of what of her desire it would be possible to own, and that it might be necessary to have from a husband? *Feme sole* thus enables us to to link these two, apparently distinct, even conflicting, features together - the *solitude*, on the one hand, and the *having everything*, on the other – such that the "expression" Ornette confronts emerges not just as an expression of solitude, of being-solitary, but as an expression of *being feme sole*, of being a woman whose *having everything* undoes entirely – at least at the level of property – any dependence linking her to an other.

Isolated points

In terms of general topology, a point, x, is an *isolated point* of a set, A, if there exists a neighbourhood of x – let's call this neighbourhood U_x - that contains no other point of A, the wider set in which x is contained, other than x.[318] x is, in other words, on its own, solitary, *isolated*. There

315 Coleman, "An Interview with Ornette Coleman", *Bonnaroo*.
316 Litweiler, *A Harmolodic Life*, 56-57.
317 *OED*, 416.
318 Hausdorff, *Set Theory*, 131-132.

is some “space” around *x* into which we can move, containing no other points, a surrounding “distance” empty of all other points, maintaining *x* in its solitude, its isolation.



However, it is possible to see that, if the lonely woman is an isolated point, if there is, in other words, a neighbourhood that contains her *and no other points*, this isolation *is an effect of her “having everything”.* “Having everything” is what produces her as *feme sole*, as a woman entirely independent of an other with respect to property, with respect to what she *has*, and which it might be necessary to have from this other.

An interval that will have everything in it

In February of 1960, just a few months after the release of Ornette's second album, *The Shape of Jazz to Come*, on which this piece, “Lonely Woman”, would appear, the musician and composer, Gunther Schuller, an early friend and champion of Ornette's work, interviewed him for “The Scope of Jazz”, a weekly radio show he then hosted with the critic, Nat Hentoff. In the course of this interview, something of the complexity of the space of Ornette's early thought opens up, as Schuller, who knew Ornette well, even having acted as a tutor to Ornette in matters of notation, questioned him at length on the sometimes unusual aspects of his music and ideas.[319] Early on in their discussion, the conversation turns to the question of *intervals*; “What do you mean by 'interval'?”, Schuller asked Ornette directly – a question to which Ornette gave the following answer:

> Well, I mean a musical pitch that carries an idea that a person is playing, a change, or a person is playing a harmonic pitch to go with the change, or a person is playing a degree of a key, or a person is playing a degree of a chord. You still have to play a pitch of music to know you're doing that. And, to me, I try to conceive maybe one interval that will have harmony, changes,

319 Coleman, interview by Schuller, *The Scope of Jazz*.

everything in it".[320]

A pitch that carries an idea - what to make of Ornette's response here, for isn't an interval, both in its musical and in its more general sense, precisely something that appears between *two* points - between two pitches – as the distance, the "gap", separating one from the other? As such, isn't it irreducible to a single point, rather requiring two points for its constitution? If in our discussion of invisibility we discerned, at the heart of the notion of transposition, a shift from points to relations, why now this apparent shift back, *from relations to points*, from the "interval" as distance, as difference, between points, to "interval" as the point itself?

In this reference to an interval – *a pitch that carries an idea* – that will have "harmony, changes, everything in it", it is also possible to hear an echo of the *having everything* of the lonely woman – the woman who "had everything you could desire in life" and who had such a solitary expression. So, what is the relation between the two, between the "having everything" of the lonely woman, and the "having everything in it" of the solitary-pitch-as-interval? And if, in the case of the lonely woman, "having everything" is linked to *solitude*, what does this imply about Ornette's music as a space of solitude?

2. Interval

The transference of a name

In one passage from his essay on beauty, to which we have referred now many times, Dugald Stewart wondered about the shifts to which the notion of an *interval* had been subjected since its origin in the *intervallum*, evidently borrowed from the phraseology of the camp; *inter vallo spatum* – the space between the stakes or palisades which strengthened the rampart. No one, says Stewart, had taken any notice of the insensible *transitions* by which this term was successively to be employed in a more enlarged sense; first to express a limited portion of longitudinal extension in general; and afterwards limited portions of time as well as of space. "How remote", Stewart exclaims in a footnote to this passage, "are some of the following applications of the word from its primitive meaning!"[321] Of course, the explanation Stewart gives for the existence of such "remote applications" is that the "transference of a name" – the transference of a signifier such as "interval" – is not, as the Encyclopedists had thought, that there is a quality common to *all* objects that share a name, the presence of which would constitute the condition for the transference of that name, but merely that there be a quality in common with at least *one* object already contained in the class of things that share that name; *one is enough*. This is what we have called "Stewart's law". So, if Ornette's "interval" implies a transference in Stewart's sense, a further transition or movement to a point even more remote than those to which Stewart refers, to what point of the existing class of meanings does Ornette's meaning relate by means of an immediate point of partial overlap, allowing the "transference of the name"? What is the relation between "interval" as "pitch that carries an idea" and the existing class of meanings connected to this name? And what is the "common quality", satisfying the condition established by "Stewart's law", thus allowing such a shift? If we

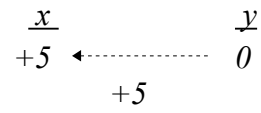
320 Coleman, interview by Schuller..
321 Stewart, *Philosophical Essays*, 223.

understand an “idea” as a *change* or *degree* of a chord or key, as Ornette suggests, the question then becomes, what does a pitch that carries a *change* or *degree* have in common with the “gap”, the distance, that separates one pitch from another? What is it that the two have in common so as to allow the transfer of the signifier from the latter to the former?

In the terms we developed earlier, a musical interval can be conceived as the relation between pitches produced by the simple metric implied by Hamiltonian analysis: B – A. If we treat the product of this analysis as an absolute value, our interval is undirected – it is simply the distance between A and B, without regard to any directed movement from A to B or from B to A. If we do not treat the value as absolute, B – A produces a directed interval – a *vector*, or directed distance, in Hamilton's terms, which moves a “moveable point” from A to B, but not (necessarily) from B to A. We also spoke of the *degree* as an effect of coordination, *+d*, of situation, as the *being somewhere* of a point with respect to a tonic point of origin, produced as the endpoint of the inverse, situating vector, when synthesised with respect to the tonic point of origin.

So, what does interval as *relation* between points – expressed in terms of tonic and situating vectors – have in common with the *effect of situation*, of “being somewhere”, produced by means of that relation? What do they have in common so as to satisfy “Stewart's law”, the law governing the transference of a name from the interval as relation to the “interval” as point, as “pitch that carries an idea”?

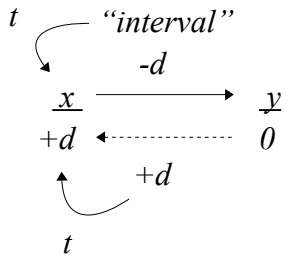
There is, as we have discussed before, a kind of intimate relation between the situating vector and the endpoint, made visible when the initial point of that vector is zero, the point of origin. Then the relation (the situating vector) and the endpoint share a name; “+5” is the coordinate five unit steps up – “+5” – from the point of origin, “-3” is the point three unit steps down – “-3” – from the point of origin, and so on.



In this sense, the name is already something the inverse situating form of the tonic vector has in common with the pitch that carries the effect of situation – what Ornette calls the degree or *idea* – something in common sufficient to satisfy Stewart's law and thus allow the transference of the name, “interval”. However, when Ornette defines an interval as a “pitch that carries an idea” is this really all he has in mind? Is it really simply a question of a coincidence experienced at the level of technical nomenclature?

Transference of a relation

We propose instead the following; if the Ornettian Interval is redefined as *a pitch that carries an idea*, it is because, correlative to the merely "technical" coincidence at the level of the name the situating vector shares with its endpoint, *something of this relation itself has been transferred to the point*, something of the ""gap"", the distance *between* points has *itself* been transferred to one of the points this "gap", this distance, relates, and is now experienced as an immanent, audible property of the point itself, something, some "substance" or *Idea*, this point now "carries".



This transfer to the point of something of the relation would then offer an answer to the question of what the interval as relation, as vector, distance, or ""gap"", has in common with an Ornettian Interval as *pitch that carries an Idea.* For, what they have in common, allowing the transfer of the signifier, "interval", *is simply the presence of something of the relation itself*, albeit in a "disavowed", inverse form as the Idea the pitch-as-Interval now carries.[322]

3. Everything in it

"Everything"

Let us now conceive the "everything" the point "has" "in it" as *everything that it would be possible to have from outside,* in the form of "harmony, changes, everything". In this sense, "everything" can be understood in terms of the "everything" taken to be absent from a music in which what Ornette has called a "set pattern" – the external, orienting, temporally-ordered framework of chords and their tonal orientations – is missing.

322 In this sense, perhaps, the Ornettian Idea could be nothing more than the effect of "up-ness" a point seems to carry as an effect of its relation to a point "down" with respect to it, or the effect of "before-ness" a point seems to carry as an effect of a relation to a point after with respect to it at the level of some order, or even the authority someone seems to bear within themselves as an effect of the order relation that constitutes the hierarchy that situates them as "above" or "greater". In terms of musical Intervals, this is correlative, perhaps, to the effect of "sixth-ness" or "third-ness" a pitch seems to bear within them, as a consequence of their being with respect to a coordinating tonic point of origin. And, in each of these instances, too, the Idea-effect is correlative to the relation that situates the points that carry them. Thus "up-ness" is correlative to an upward relation situating the "up" point with respect to what is down, "before-ness" is correlative to an order relation situating the "before" point with respect to what is after, authority is correlative to both of these relations, insofar as it implies both order and "height", and so on.

In his interview with John Litweiler, Gunther Schuller reported something Ornette had said during the lessons Schuller had offered him on reading and notation, implying something other than the harmonic Ideas that pertain to "harmony" and "changes", and thus a possible generalisation of the Ornettian Idea to include in this "everything" the effects of relations other than those of harmony:

> Over a period of, when I think he was playing in blues bands in Texas, he had for some reason begun to associate certain pitches with certain characters. In other words, certain notes were always upbeats and they could only be upbeats.[323]

If "upbeat" and "downbeat" imply a temporal vector-relation, which we could represent as "*+1*" – what moves "a moveable point" one beat-unit step "forward" (in time) from the downbeat to the upbeat, an upbeat Idea can be conceived as the inverse (situating) form of this vector (*-1*), now *transferred to the point*, such that the upbeat Idea is experienced as an immanent property of the pitch. The note ("always") has an upbeat "character" – it always carries "in it", in other words, an upbeat Idea.

"In"

Let us conceive "in" in terms of *the interiority of the point.* The Ornettian Interval is now a "space" with an interior and exterior, and what was taken to be exterior, in the form of "harmony, changes, everything", is now interior. The Ornettian Interval-point now has "harmony, changes, everything" "in" it.

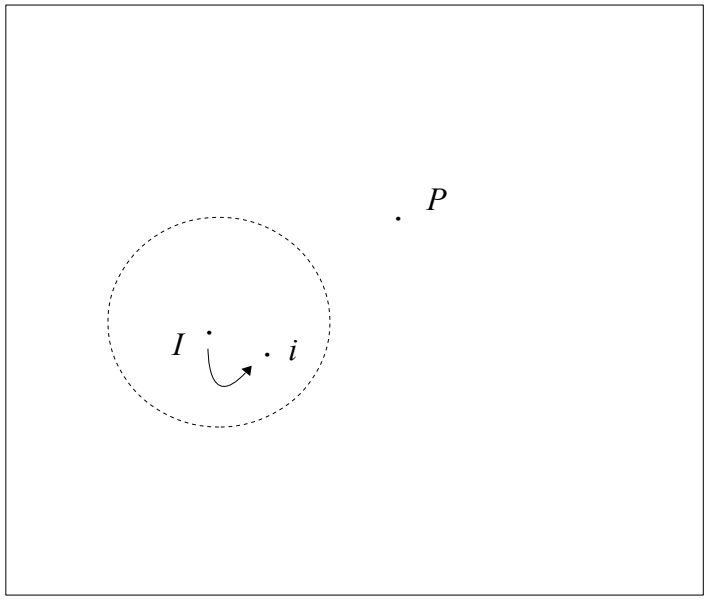
"Having everything in it"

The "having everything in it" that pertains to the Ornettian Interval can now be formulated in the following way. *There is nothing that could be had from the exterior, in the form of "harmony, changes, everything", that is not already to be found on the interior. Everything* that can be had from the exterior, in the form of "harmony, changes, everything", is already to be found on the interior. The Interval *has everything in it.*

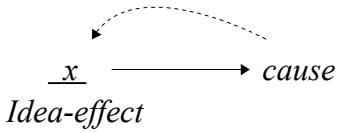
Pitch sole

In this sense, if the "lonely woman" is a *feme sole*, insofar as her "having everything" at the level of what it would be possible to desire frees her of dependence on others, the Ornettian Interval (*I*) is a *pitch sole*, insofar its "having everything in it" (at the level of Idea (*i*)) frees it of dependence on exterior others (*P*). It is *solitary*, because there is nothing that could be had from the exterior that is not already to be found on the interior.

323 Litweiler, *A Harmolodic Life*, 94.



So, if an Interval is defined as *a pitch that carries an Idea*, and an *Idea* the pitch carries is defined as something of the inverse, situating form of the (tonic) relation, *transferred to the point*, as something, some substance, this point now "carries", and if "everything" is to be given in terms of "harmony, changes, everything", how is it that an Interval can "have everything in it"? How is it that an Interval – a pitch that carries an Idea – can possess "everything" – "harmony, changes" – as some property interior to itself? We propose the following simple answer. An Ornettian Interval can have "everything" – harmony, changes, everything – "in it", insofar as the Idea the pitch now carries, somehow immanent, internal to itself, *is nothing but the inverse effect of the relation to those tonic points that constitute harmony, changes, everything* – insofar, that is, as the Idea is the effect of the pitch-as-Interval's relation to harmonic tonics, tonal tonics, to the points of changes, and so on. The presence of the Idea *effect*, in other words, necessarily implies the ("disavowed") presence of its tonic *cause.*



"Behind all interpretation", say Ogden and Richards in their treatise on meaning, "we have the fact that when part of an external context recurs in experience, this part is, through its linkage with a member of some psychological context", "sometimes a sign of the rest of the external context"[324] – a sign sufficient to evoke, to "call up", the rest of the context in an act of "completion" we have linked to *transference.* There is, in effect, a *transference of the context*, contingent on a "quality in common" at the level of what Ogden and Richards call the "sign"; the sign is a "stimulus" "*similar*" to some part of the original stimulus, and, thus, sufficient to evoke, to call up, the rest of its context. So, if there is an experience of an Ornettian Interval – if there is the experience of an Idea connected

324 Ogden and Richards, *The Meaning of Meaning*, 57.

to a pitch as something that pitch carries – and if this Idea is nothing but the effect of the pitch-as-Interval's relation to tonic contexts "exterior" to it, then the experience of an Interval must imply the transference of this context, must imply the "disavowed" experience of the presence of this context the relation to which produces the Idea as its effect.

4. Carries a complete idea

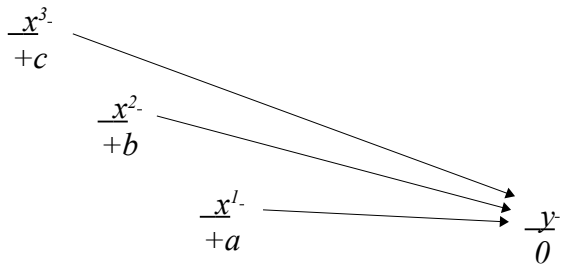
A little later in his interview with Schuller, and in the context of a discussion of connection and disconnection experienced in relation to Ornette's music, almost exactly Ornette's formulation for the Interval – the pitch that carries an idea – appears, but now to describe a *phrase*. If before, in their discussion of Ornette's Interval, it had been a pitch – a single point – that "carried an idea", here it is a phrase – a *collection* of points – points plural – that "carry an idea", and that Idea, says Ornette, is "complete". "They say", says Schuller, referring to Ornette's sometimes hostile audience, that "none of the phrases make any sense. They don't connect up. It's just a bunch of notes". "Yeah that's right", responds Ornette, "but they don't realise that the phrases...carry a complete idea as it's played".[325]

What then, to make of this consonance at the level of expression, this appearance of the same fragment of speech, implying that both pitches and phrases can carry, can be the *vehicles* for, Ideas? To what extent does it imply a generalisation of the notion of "Interval" to refer to not only points singular, but to points plural, to collections of points – correlative, perhaps, to the use of "signifier" to refer to not only single words, but to words collected into phrases, and further? What also to make of this reference to completeness, to the notion that the Idea a phrase – and perhaps also a pitch – carries can be "complete"? What is this "completeness" that pertains to the Idea, and what does it have to do, perhaps, with the "having everything in it" that pertains to the Interval that Ornette has said that he tries to play? Does an Interval that "has *everything* in it" "carry a *complete* Idea"? And what, finally, of the relation between completeness, of a phrase that "carries a complete idea", and "disconnection" – the experience that Ornette's "don't connect up", that they're "just a bunch of notes"?

Phrase ideas

If we conceive of Ornettian Ideas in terms of *degrees* – the degree of a chord, the degree of a key, as suggested by Ornette – then there is a problem when we talk of Ideas in terms of the *multiple* points that pertain to phrases. For, if all of the points of a phrase are situated with respect to a common point, and if these points are different from one another, this will, of course, produce multiple "degrees" – multiple Ideas – insofar as the values that pertain to the situating vectors are also multiple. Although x^1, x^2 and x^3 are situated with respect to a common point, y, the ideas, $+a$, $+b$ and $+c$, they carry as a consequence of this relation are different.

325 Coleman, interview by Schuller.



If Idea is understood in the sense we have been using with respect to "degrees", the only way for the different points of a phrase to carry the *same* Idea would be if each of the points of the phrase were related in *parallel* – situated, that is, with respect to different points so as to produce a consonance at the level of the Ideas these situating relations produce.[326] Now each point, *x*, carries the "same Idea", marked in *fig. 7.1* as *+a.*

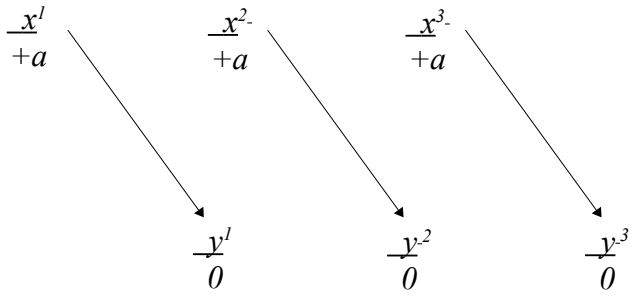


fig. 7.1

However, we could also conceive of the multiple Ideas produced with respect to a single tonic point in more general terms, as a single "tonic Idea" – each of the points of the phrase carry, for instance, an Eb tonic-Idea. Or, we could treat the phrase as a single point, much like a spoken phrase can be considered a single signifier; now the Idea a phrase carries pertains to the phrase as a whole, with the singularity of the Idea correlative to the singularity of the phrase and distinct from any Idea each of the individual points of that phrase may carry. In this sense, for instance, one could conceive of a *phrase Idea* in terms of the meaning or function a particular phrase has with respect to other phrases in a wider section or piece – something that tells us, perhaps, about the identity of the phrase, what it is for the other points in that section or piece – and which is experienced as an immanent property of the phrase itself.

Disconnection

So, what of this other dimension, identified by Schuller, that has to do with the *connectivity* that pertains to Ornette's music? "They say that none of the phrases make any sense. They don't connect

326 "Parallel", in this instance, has the sense we introduced on page 105, where "angles" for one-dimensional vectors are produced by means of a unit difference on the axis opposing the pitch axis).

up...” What to make of this experience of *disconnection* to which Schuller refers, a reference to which Ornette responds with the notion of *completeness*, that those who experience disconnection fail to realise that “the phrase carries a *complete* Idea”? What is the relation, in other words, between disconnection and a completeness that we have linked to an *Interval* that “has harmony, changes, *everything* in it”?

In general topological terms, a set, A, is *disconnected* if it can be “decomposed” into disjoint summands – if, in other words, it can be conceived in terms of disjoint subsets (subsets without overlap), the union of which produce the set, A.[327] Thus, a space composed of *isolated points* – points for which there exist neighbourhoods containing only those points and no others, as discussed earlier – is a *disconnected space* in this sense, for the simple reason that the isolating neighbourhoods constitute a tesserae of disjoint subsets, the union of which produce the space. If Ornettian phrases carry a complete Idea, insofar as they have everything in them, and insofar as this “having everything” is linked to *solitude*, such that we can speak of the Ornettian Interval or “Interval-phrase” (a phrase that carries a complete Idea) as *pitch-sole* or *phrase-sole* – “Intervals” that, having everything in them – being *complete* – require nothing from outside, are, entirely independent of exterior others – then this offers a relation between completeness and disconnection. An effect of disconnection is an effect of the isolation of the Interval, produced as it is by its internal completeness, its “having everything in it”.

5. Movement

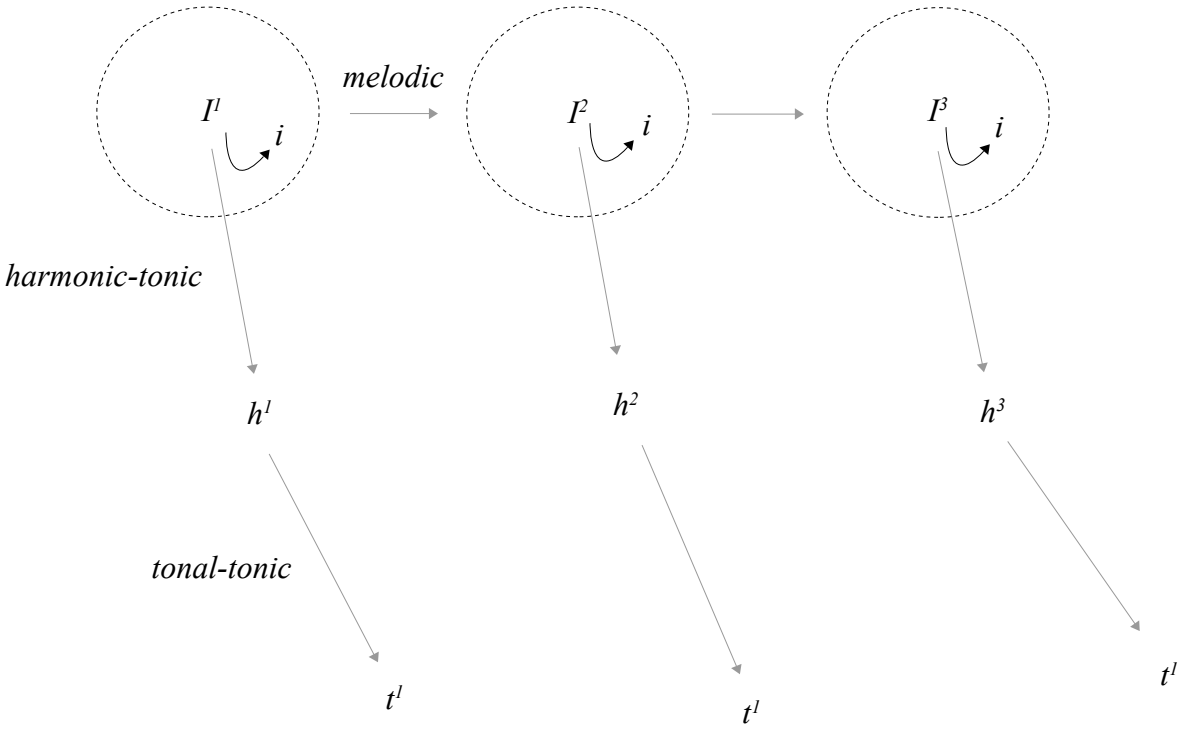
> After three years or so in Los Angeles, learning how to play bebop, I found I could use notes in a way that was equal to playing chords, but if I used notes as chords without them being chords, I was no longer restricted to doing sequences. At first I tried to understand how it would work in terms of writing music. That's how I started by improvising, and then took it to writing. I found that this idea doesn't allow you to compose in sequences, so I used "movement" as another word to describe each new melody.[328]

“I found I could use notes […] as chords”, says Ornette, “without them being chords”, but notes used in this way, first in the context of improvisation, then composition, is somehow incompatible with “sequences”, from which notes-as-chords nonetheless offer an escape, a way of playing and composing no longer subject to its limitations. Then, as a consequence of this incompatibility with the sequence, there is a transference of a signifier, “movement”, to describe each new melody constituted in this way. But what would it mean for a note to be used “as” a chord? How could a single note appear in place of the multiple points that constitute a chord, taking their place, their function?

We propose the following. Notes are “used as chords without them being chords” to the extent that these notes *carry a harmonic Idea*, the being of their relation to a harmonic context, the transference of which produces the Idea as its effect. In this sense, our discussion of an Ornettian Interval that “has harmony, changes, everything in it” already implies “notes as chords”, already implies that the

327 Hausdorff, *Set Theory*, 172.
328 Shipton, *A New History of Jazz*, 567.

pitch-as-Ornettian-Interval is the bearer of harmonic Ideas that imply the transference of a wider harmonic context. This would enable us to conceive the space of a *Movement*, a *Movement space*, in Ornette's sense, as a space of Ornettian Intervals, the space of a "horizontal" melody, where the points of that space are caught up in "vertical" (harmonic) spaces – spaces that appear immanent to a point-as-chord in the form of the Ideas they carry. If we draw in the distinction between harmonic and tonal tonics we introduced in chapter V, this would produce a succession of Intervals (I), suspended from each of which are ("disavowed") branches linking these points to their harmonic (*h*) and tonal tonics *(t),* producing harmonic-tonic and tonal-tonic Ideas (*i*) as their effect, which are then experienced as immanent properties of the Ornettian Interval-notes-as-chords. This is a articulation of Ornettian *Intervals* producing what Ornette calls a *Movement*.



With Ornette's reference to "sequence" understood in terms of "changes" – a sequence of tonally-oriented chords, as we suggested in chapter V, where this "sequence" is predetermined, decided in advance, then it is possible to see why composing Movements would cause a conflict at the level of "sequences", for the "harmonics" implied by a Movements already imply chords, already imply, in the form of notes-as-chords, harmonies, which are then in danger of coming into conflict with some underlying, predetermined sequence of chords. This is one way to make sense of something Ornette said to the reed player, Eric Dolphy, about an experience of coincidence at the level of harmony, that "if someone played a chord, he heard another chord on that one".[329] If the chord someone is playing is part of a predetermined harmonic "sequence", and the note Ornette is playing is "used as a chord", this would produce the coincidence of harmonies Dolphy describes – another chord on that one, another set of chords overlaying the chord sequence someone else is playing.

329 Williams, *Jazz Panorama,* 283.

Har-mo-lodic Movement

Ornette has told us that the word, "harmolodic", is a neologism, the combination of three distinct words, producing a new word naming his approach – *harmolodics* as the fusion of harmony – *harmonics* – and melody – *melodics* – with another signifier – *movement* – at their intersection:

h a r m o n i c s

m o v e m e n t

m e l o d i c s

And, in a sense, it is possible to see that the structure of this signifier – *harmolodic* – itself manifests the structure we have been discussing, of *melodic* "notes" that, "as chords" – *harmonics* – emerge as points of intersection between melody and harmony, thus constituting what Ornette calls a *Movement.* The Ornettian *Interval*-note-as-chord constitutes a point of meeting, of overlap, between *melodic* points that, as *Intervals*, "are" chords" insofar as they carry harmonic Ideas "in" them – function *har-mo-lodic-ally* – as simultaneously melody and harmony. The structure of *har-mo-lodics* is, in this sense, itself transposed into the structure of the very signifier that names it.

6. A cure for solitude

So, let us turn finally to a question to which we alluded at the start of this chapter, that has to do with healing, with a cure, with Ornette's music as a cure for a condition Ornette has linked to loneliness, as what you are when you are lonely, the condition of *solitude.* A *cure for solitude*; what, given the account of solitude we have offered in this chapter, would such a cure entail? If solitude constitutes a malady, a condition to be healed, how could music – *Ornette's* music – constitute the cure for such a malady?

If solitude is to be conceived in terms of "having everything in it", and "having everything in it" is to be conceived in terms of the Idea – as "something of the relation transferred to the point" – then the solitude, the being *pitch-sole* of the Ornettian Interval, only emerges insofar as the pitch is *not solitary*, insofar as there is another – a tonic pitch – with respect to which that pitch is situated, an effect of situation then (mis)perceived as an immanent property of the point, independent of the relation to its tonic cause. The *being alone*, the being solitary, of the pitch in other words, is *nothing but the "disavowed" form of its being related*, of *not* being alone; what it "has in it" is nothing but the effect of what it has "outside" it, its being with respect to tonic others, the relation to which produces a property-effect, the effect that the pitch *has* something, independent of this being-for-others.

I.A. Richards conceived of the new rhetoric he proposed in his *Philosophy of Rhetoric* as a riposte

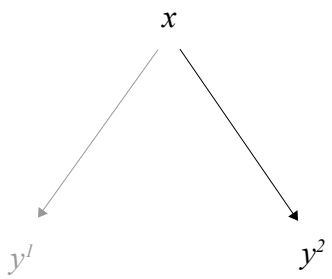
to what he called the "proper meaning superstition" – the belief that a word has a meaning (one, ideally) independent of its context and use, and for the expression of which it should be uttered, with its supposition that words "just sheerly possess their sense", as men, he says, have their names, and "carry this meaning with them into sentences, regardless of the neighbour words",[330] building the meaning of a sentence "as a mosaic is put together of discrete independent tesserae."[331] Rather, says Richards, meanings are "resultants" which arrived at only through the "interplay" of the interpretative possibilities of the whole utterance".[332]"A word, when isolated momentarily from its controlling neighbours", he says, "is free to develop irrelevant senses which may then beguile half the other words that follow it".[333] However, if meaning is, as Richards has said, a "resultant", the effect of the interplay of a word and its "controlling neighbours", the emergence of a sense, however relevant or irrelevant, already implies the presence of neighbours, already implies that the word, the point, in other words, is *not isolated* – just as an Idea a pitch carries as "Interval" can also only emerge insofar as that pitch is *not isolated*, insofar as it is experienced as related, as being with respect to, another point, the inverse form of the relation to which is then transferred to the point as the Idea it "carries".

So, if solitude is an effect of "having everything in it", and if this interiority of the *Idea* with respect to the *Interval* is a disavowed form of its exteriority in the form of the relation, then a *cure* for solitude would imply the avowal that what is experienced as inside, as interior to the point, is the contingent effect of its being with respect to the outside, its solitude the effect of its being for others. In this sense, a cure for solitude could be situated on the side of *change*, on the side of an experience that a change at the level of the "internal" *Idea* is correlative to a change at the level of the exterior relation. Change, in this sense, restages the constituting, prior moment of exteriority disavowed by an experience of interiority, it puts on show the relation, the being-out-for-others, disavowed by the shift to *Idea*, the being-in-oneself.

Loss of a relation, loss of an Idea

In chapter V, we saw that certain properties pertain to the tonic relation, where "tonic" is understood in the wider sense implied by the transference of this name from "tonal tonic" to "harmonic tonic". A point, we said, can change its tonic (from y^1 *to* y^2) – more than one point can be a tonic for a point, x – but it cannot *at once* have more than one tonic, unless the points are linked together transitively. The relation is, in this sense, *exclusive*, it can be a relation to one point or another, but not both at once.

330 Richards, *The Philosophy of Rhetoric*, 54.
331 *Philosophy of Rhetoric*, 55.
332 *Philosophy of Rhetoric*, 55.
333 *Philosophy of Rhetoric*, 55.



Although the implied relation is different, the same exclusivity pertains to melodic direction; there can be, in other words, a change of direction, a shift to a new consequent at the level of the order that pertains to a melody, but this new direction is exclusive of the old, it is one or the other, never both; only one of these directions, in other words, can "be" the melody. In this sense, in both instances, a *loss* pertains to a change of direction, there is a *loss of direction* correlative to the exclusivity of the relation, for the exclusivity of the relation is such that, when I choose a relation to a determinate point, I lose my relation to the point to which I was previously related by means of that relation. A *gain* at the level of the relation, in these specific instances, *always necessarily entails a loss* at the level of my relation to any points to which I was previously related. If an *Idea* is a relation-effect, then such a loss at the level of a relation necessarily also implies a loss at the level of the Idea, for the exclusivity that pertains to the relation also pertains to the Idea; one can have more than one Idea, but not *at once* – it is one or the other, not both, unless these Ideas are linked together transitively.

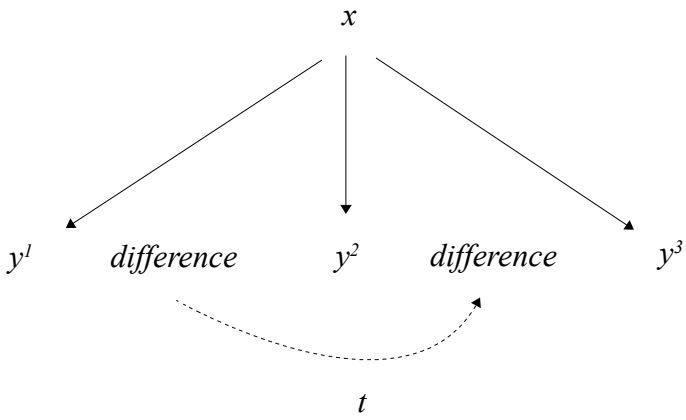
However, this allusion to *loss* is perhaps sufficient to alert us to an insufficiency at the level of our cure for solitude, at the level of *change* – a change of relation producing a change of Ideas as its effect. For *loss* is not correlative to *lack*, the loss of a relation, of an Idea, is not correlative to the lack of a relation and its associated Idea. There may be, in other words, in the experience of loss, the experience of a *wrong*, of the loss of what is *proper to* the point, the loss of a relation and its correlative Idea that *rightfully belongs* to, that is the *rightful property of*, the point. *Change*, in this sense, may itself take on the quality of a search for *lost property*, for relations that will restore the Idea proper to the point, its proper being, what was rightfully its own, and of which it has wrongfully been dispossessed in this shift at the level of external relations.

Lack of a relation, lack of an Idea

In the liner notes to *Something Else!!!*, Ornette's first album, on which "Invisible" would appear, Walter Norris, the pianist for this recording, described the process that characterised its creation, a process marked, he suggested, by a profound attention to change, to *difference*. "Each time we played the tunes", he said, "we'd change them around a different way. We did everything possible we could with them". This attention to change, to variety, to the dimension of *something else*, was echoed in Ornette's own words in these notes:

> I would prefer it if musicians would play my tunes with different changes as they take a new chorus so that there'd be all the more variety in the performance. On this recording, the changes finally decided on for the tunes are a combination of some I suggested and some the musicians suggested. If you feel the lines differently one day, you can change the harmony accordingly.[334]

In these words, another dimension emerges, another kind of "change", another sense of "something else" that is not the search for a lost, determinate point, realising a determinate relation, but the desire for for change, for *difference*, for *otherness*, itself – *something else*, not as a search for a lost object, but the desire for the relation that relates such objects, for what makes one to the other something else, something different. And it is possible to discern in this desire for something else, for *difference*, for *change* itself, the shift from points to relations we found in our discussion of *free relations*, of "free directions", the shift from "something else" as a *point* to "something else" as a *relation* that relates some point to a point other to it. There is, we could say, the repeated *transference of a relation* – the transference (*t*) of a relation of *difference*,[335] of otherness, from one set of points to another.



This shift from points to relations, from *something else* as point to *something else* as relation between points, is correlative to a shift to *lack*, the *lack of a relation*, for, from the perspective of this desire – the desire for difference – the constitutive relation is "lateral" – it relates relation to relation, difference to difference – it merely says that difference will be *repeated*, that there will be an *equivalence of differences*, the "repeated transference of a relation (of difference)", *with no indication of which points* ($y^1, y^2, y^3, ...$) *will manifest that relation.* There is nothing, in other words, at the level of this desire which indicates "where" this difference will "go", where, by which points, it will be manifest, *only that it will be a difference*, only that this going will manifest this difference. Now the point, *x*, "lacks" a relation (to *y*), because there is nothing at the level of the shift to *free difference relations* that would imply a relation *proper* to that point, that would distinguish between a relation that is the rightful property of the point, and thus, in danger of being wrongfully lost, and a relation that is improper, the *wrong relation*, and thus to be discarded in favour of *something else*.

334 Hentoff, liner notes to *Something Else.*

335 In this instance, "difference" implies something much broader than a vector, something much more general than a vectoral "difference", and in this sense, the relation relating differences is itself much broader, an equivalence relating difference, such that difference is repeated, transferred, from one set of points to another.

This lack at the level of a relation proper to a point is, again, correlative to a lack at the level of the Ideas the point is experienced as carrying as an effect of these relations. For, if there is nothing at the level of the *free difference* which would determine "where" it would "go", by which points (*y*) it would be manifest, then this is to say that there is nothing at the level of the *free difference* that would determine which Ideas are to be produced as the effect of these manifestations. The Idea produced can be any Idea, so long as it is the effect of the manifestation of a *free difference.*

"Ornette went on to say about his general goal", says Hentoff in his liner notes for *Something Else*, "that the direction of a tune in performance can vary from bar to bar", before quoting Ornette directly:

> If I don't set a pattern at a given moment, whoever had the dominant ear at the moment can take and do a thing that will release the direction from what it always was into something better. And I believe in going with him. The drummer can help determine direction too, because he can turn phrases around on a different beat, for example, thereby raising the freedom of my playing.[336]

If the note to which Schuller refers in his account of his lessons with Ornette that is "always a downbeat", that always has a certain downbeat "character", carrying a certain downbeat Idea "in it", is related to solitude, then here, in these changes of direction, in this drumming that "turns phrases around on a different beat", we have a specific instance of the cure for solitude we have proposed, where *turning*, producing difference as its effect, is a *free turning*, the desire for turning, for a change of direction, itself, regardless of the specific directions produced by means of this turning. If the Interval is solitary insofar as it carries a downbeat Idea in it, and thus requires nothing from the outside, now as a consequence of the intervention of the outside, in the form of a drumming that turns, this "having in it" is transformed into a lack, the lack of any "interior" beat-Idea proper to the point, correlative to a lack, produced by a shift to *free turning*, at the level of the beat relation it has exterior to it.

So, if "to follow" means "to go where I go", what are the consequences of these reflections regarding solitude – the *being-feme-sole* of the "Lonely Woman", the *being-pitch-sole* of the Ornettian Interval – as well as the *cure* for solitude we have discussed, for the question of what it means to follow? What are the consequences at the level of what it means to go, to move, where "I" moves?

7. What does it mean to follow?

In the first sense, the har-mo-lodic structure of an Ornettian Movement implies movement in two directions – first, the "horizontal" movement from isolated Interval to Interval, and, second, the "vertical" movement implied insofar as the Interval, as "note-as-chord", carries a harmonic Idea "in it", contingent on the ("disavowed") transference of a harmonic context exterior to it, the relation to which produces the harmonic Idea as its effect. With respect to the first of these, to "go where I go" thus means to go to an isolated point, a point experienced as contained in an isolating

336 Hentoff, liner notes, *Something Else*

neighbourhood of a disconnected space. With respect to the second, there is a problem, however, insofar as the movement in the direction of an exterior orienting "where I go", which produces the Idea as its effect, is experienced as a property of the interior, without the need for a movement out that would make the "where to go" it implies manifest. For, when we recall the order that pertains to effects of situation (see page 89), it is possible to see that, with the Ornettian Interval, the initial movement *out* from a point to an orienting point of origin, which would then produce, on the return, situating journey, the Idea as its inverse effect, *is already done*; if the point already carries an Idea "in it", this implies that one has *already moved* – there is no need to move *out* from the point, for the effects of such movement are already here, are already experienced as an immanent Idea-property the Interval has *in* it. In this sense, "to follow" is to go to a point to which the Interval has already gone, in order to (re)produce the Idea the Interval carries "in it" as the effect of this movement. However, confronted with an Ornettian Interval, if the Idea it carries is nothing but the "disavowed" form of the relation experienced as transferred to the point, and if this relation relies for its constitution on *two* points, as the Hamilton vector relies for its constitution on the two points of subtractive analysis, how does one experience the relation/Idea when this other point is absent? How does one experience the relation/Idea if the pitch is solitary, if it is *pitch sole*, isolated from those neighbours with respect to which a vector could be produced? If there is no necessary relation between Idea-coordinate and coordinated, as we have said, then the only solution is to leap, with the possibility that "you" and "I", again, leap to different consequences, different points of harmonic orientation, producing different Idea coordinate-effects.

On the other hand, if we conceive of the space of Ornette's music not as a space of solitude, but as a space that constitutes a *cure for solitude*, and if this cure is conceived in terms of a shift to *free difference*, then the "endpoint" in the direction of which "I" moves is, again, itself a relation – a difference – with no indication of "where" this relation is to "go", by which points it is to be manifest. From the perspective of the desire for difference, the difference can go anywhere, so long as this going manifests this difference. In this sense, we could say that "to go where I go" in a space of free difference is *to go to difference*; you and I *converge to difference*, and, insofar as this difference relies on points to manifest itself, to *go to difference* means to go – to manifest – anywhere, by means of any points, such that this going manifests this difference. Anywhere, *so long as it's different.* Reformulating this desire for difference in terms of the curative shift from having to lacking, to go where "I" goes in a space of *free difference* means to go anywhere *such that this going manifests the lack of a relation*, such that this going manifests the lack of any determinate relation proper to the point and thus of any Idea that this point is experienced as carrying "in it". Going "anywhere", in this sense, *is the means of manifesting the lack of a determinate "somewhere".*

Closing remarks

If the "going anywhere" of a space of *free difference* implies a lack, the lack at the level of a relation proper to a point, and thus the lack of any Idea correlative to that relation, we now turn to a lack of a relation of a different, perhaps stronger, kind, a lack that is not simply an "anywhere" that is the expression of the lack of a determinate "somewhere", but a lack that is a *no relation*, the absence of a relation, a relation that is not one between two spaces that "haven't any relation", and which has

something to do with conflicts in relations of love.

VIII. Lonely Woman: no relation

1. Introduction

The tension in all love conflicts

When *The Wire* interviewed Ornette in 2005, it asked him about this piece, "Lonely Woman", and, in particular, about its temporal aspect. "How", asked the interviewer, "did you get the idea of the drums playing double against the saxophone?" "Playing fast?", Ornette asks. "That's the tension that I see in all love conflicts. It's like time is running out, but you're standing still".[337] Leaving aside for a moment the question of love, a question nonetheless intimately connected to the problems we have been discussing, of a woman who had everything, but whose having everything introduced a problem at the level of her relations of love, what to make of Ornette's response here? What is this *tension* that characterises the relation between the saxophone and drums, a tension so striking in the history of music, described here as both "double" and "fast"?

To introduce this question, let us turn to something Ornette said to Gunther Schuller, in his interview from 1960, about the question of notation and, in particular, of how to become a "precise reader", which, he says, he "never could".[338] At the origin of his early attempts to read, Ornette says, there was an experience of disorientation with respect to the aspect of time, and in particular to the level of tempo. Ornette refers specifically to "Cherokee" – another song about love – the first movement from Ray Noble's *Indian Suite*, written in 1938, a piece that would become the framework to which so much melodic improvisation would relate itself:

> I have never seen it notated, but it's always played, the melodies always played twice as slow as what they play it […] That's a good example, you know. And I said, well, they're playing as fast as they can play, and it sounds like a ballad […] That's one way I started reading. I started learning how to read like that, you know, that, whatever I read, it wasn't really the tempo that it was in. It was always either against it or above it. It was never that.[339]

"They're playing as fast as they can play", says Ornette, "and it sounds like a ballad". Could it be that this characterisation of Ornette's experience of "Cherokee", that echoes so closely the one we have just given of "Lonely Woman", of drums "playing fast" against the saxophone, has something to tell us about the temporality of perhaps Ornette's most well-known piece, and thus about the "tension" that Ornette perceives in all conflicts of love?

2. Cherokee

The first recording of "Cherokee" appeared in 1938, performed by the Roy Noble Orchestra under the composer's own direction. If we take the minims played by the bass in this performance (quarter note plus quarter note rest), the quarter note implied by the interplay of bass and intervening chords,

337 Coleman, "A Question of Scale", 22.
338 Coleman, interview by Schuller: 23:53 – 23:59.
339 Coleman, interview by Schuller: 24:07 – 24:35.

and the whole note heard in the first bar of the melody, as three distinct levels at which a beat could be experienced, this would then offer us three distinct tempos, to each of which a signifier of *medium, fast* or *ballad (slow)* could be transferred, with a half-note beat implying a *medium* tempo (c.112 bpm), a quarter-note beat a *fast* tempo (c.224 bpm) and a whole-note beat a *ballad* tempo *(slow)* (c.56 bpm) (See *fig. 8.1*).[340] In Charlie Parker's famous version of Cherokee recorded in 1942, the tempo is slightly faster, with a half-note beat offering a tempo of c.152 bpm, a whole-note beat a tempo of c.76 bpm, and a quarter-note beat a tempo of c.304 bpm – tempos we could characterise with the same three signifiers - *medium*, *slow* and *fast*.[341]

Cherokee (*Ray Noble*)[342]

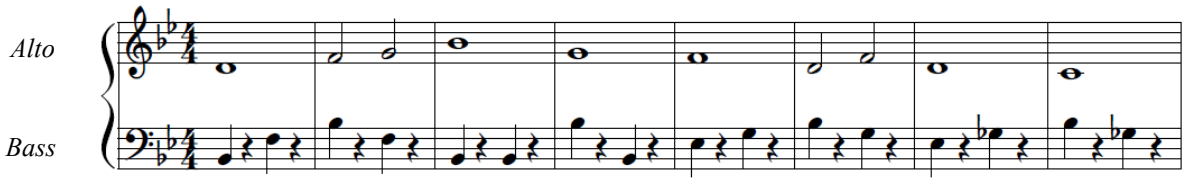
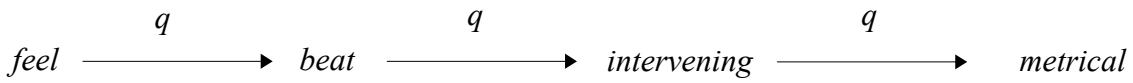
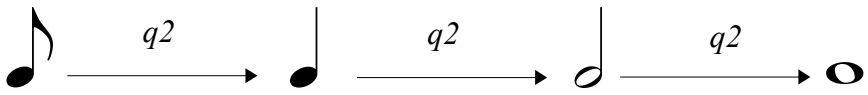


fig. 8.1

Given these beats and the tempos they imply, we can determine a corresponding metre implying a *chain* lying within the duration space proposed on page 66.[343] Such metrical chains contain the beat, the "feel" duration subdividing this beat (thus making it, for instance, a "simple" or "compound" metre), the metrical duration (the duration of a whole bar), as well as any intervening durations.[344]

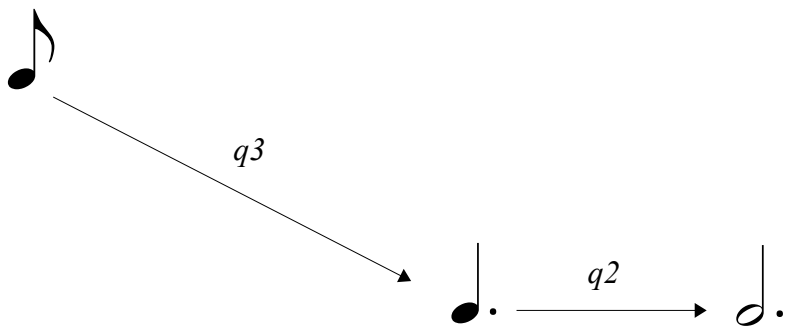


Thus, 4/4 implies the chain (𝅘𝅥𝅯, 𝅘𝅥, 𝅗𝅥, 𝅝) (represented here as an ordered set) containing the beat duration – 𝅘𝅥 – the "feel" duration – 𝅘𝅥𝅯 – the metrical duration – 𝅝 – as well as the intervening duration – 𝅗𝅥 .[345]



6/8 implies the chain (𝅘𝅥𝅯, 𝅘𝅥., 𝅗𝅥.) containing the beat duration – 𝅘𝅥. – the "feel" subdivision – 𝅘𝅥𝅯 – as well as the metrical duration – 𝅗𝅥., and so on.

340 Noble, "Cherokee", October 11, 1938: 0.09 – 0.18.
341 Parker, "Cherokee", track 12, *Bird in Time, Vol. 1.*
342 The transcription is our own.
343 See page 49 of this thesis for an explanation of the mathematical notion of "chain".
344 Where "*q*" stands for "quotient", as it is produced "analytically" (in Hamilton's terms) by dividing the consequent duration by the antecedent duration.
345 In the case of 4/4, this might account for why beat three is "stronger" than beat two and four)



When each of these durations internal to a metrical chains are realised as a “continued analogy”, in Hamilton's sense (see pp. 95-96) – the “transference of a relation” – such that the endpoint of a duration and the initial point of its repetition coincide, and such that the initial point of all realisations of those durations also coincide, it produces the space of a *measure*, or bar. This is represented by the duration vectors in *fig. 8.2*, which realises the metrical chain (𝅘𝅥𝅯, 𝅘𝅥, 𝅗𝅥, 𝅝) to produce two bars of 4/4. The duration of each vector is given in terms of a quarter note unit on the *x* axis, with the “angle” of each vector produced by means of a unit difference (*U*) on the *y* axis. Vertical, dashed lines show the boundaries points of each measure (i.e. the endpoint of one bar coincident with the initial point of the following bar).

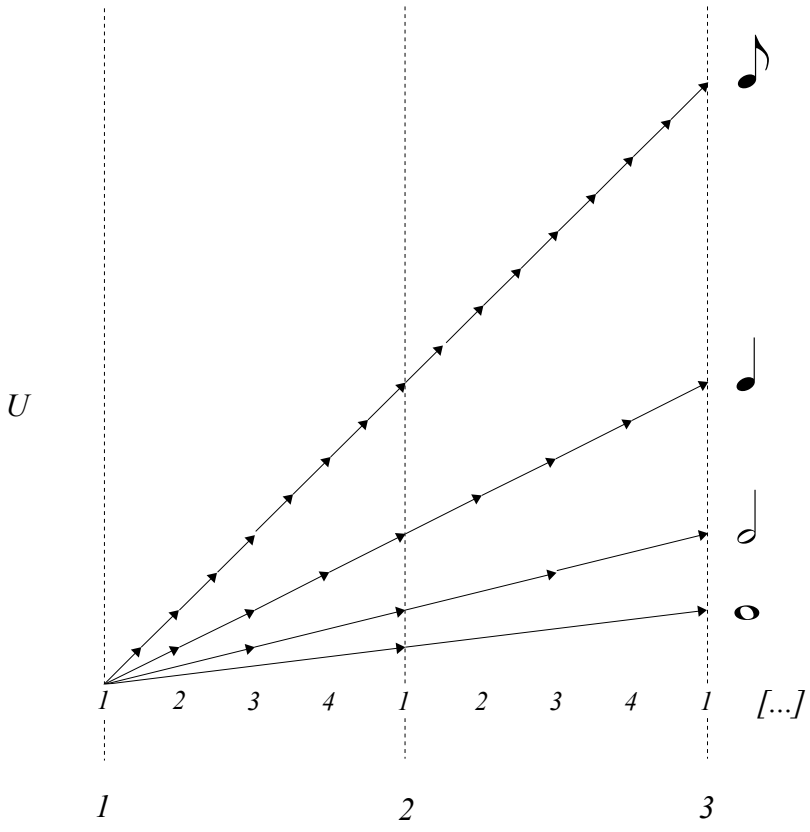
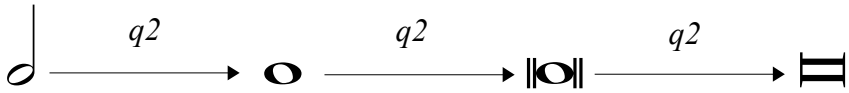


fig. 8.2

With respect to our analysis of "Cherokee", with a quarter note beat producing a "fast" tempo, the implied metrical chain is (𝅘𝅥𝅯, 𝅘𝅥, 𝅗𝅥, 𝅝), where the metre is simple (the "feel" duration subdivides the beat in two) and where there is a metrical duration equal to four beats (coinciding with the metrical duration as written in Ray Noble's original score). This is the metrical chain given above as 4/4. With a whole-note beat producing a "slow", ballad tempo, the implied metrical chain is (𝅗𝅥, 𝅝, 𝅜, 𝅗𝅥) where the metre is simple (a half-note subdivides the whole-note beat "in two") and the metrical duration is equal to four whole-note beats, thus including an intervening "breve" twice as long as the beat and half as long as the metrical duration, as in the example of 4/4, given above.



We can represent the relation between these two metrical chains by *q*4; if we treat the "fast" chain as an ordered set, we can produce the "slow" chain by means of "scalar multiplication" – *q*4(𝅘𝅥𝅯, 𝅘𝅥, 𝅗𝅥, 𝅝) = (𝅗𝅥, 𝅝, 𝅜, 𝅗𝅥). In other words, each duration in the "fast" chain produces the corresponding duration in the "slow" chain when multiplied by four, as shown in *fig. 8.3*. Inversely, the "slow" chain is "four times as slow" with respect to the fast chain.

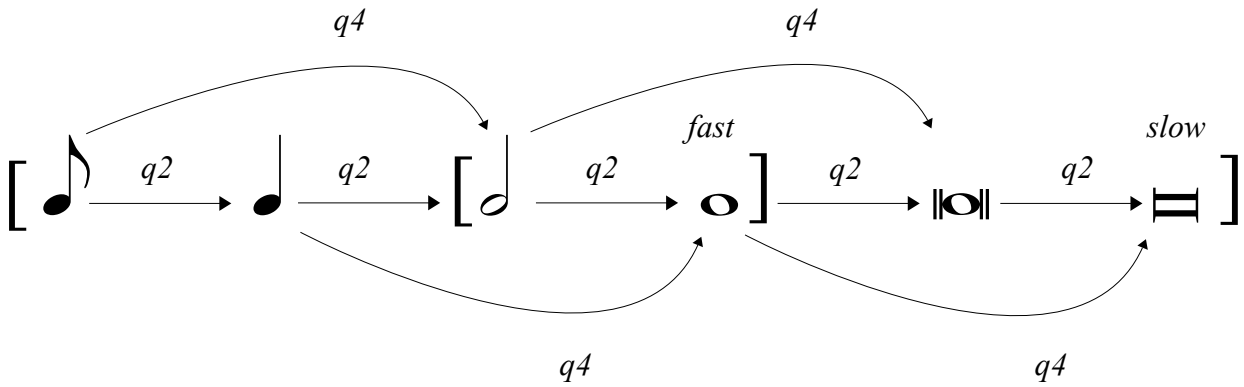


Fig. 8.3

What we have discerned here, in the relation between the two times of "fast" and "slow", which we have characterised by means of "*q4*", is thus a first approach to the question of "tension". There is, between the fast and slow tempos, a simple relation, a simple "difference", given in terms of a difference between two metrical chains that lie within the duration space, and that difference is a "quotient difference", *4*.

3. Schuller's “Lonely Woman”

In 1961, the year after he interviewed Ornette for his WNBC radio show, Schuller published *A Collection of the Compositions of Ornette Coleman*, in which transcriptions of some of the compositions from Ornette's third album, *The Shape of Jazz to Come*, appeared, including a transcription of “Lonely Woman” (*fig. 8.4*).[346] In this transcription, Schuller gave the metrical direction as *alla breve* – two half-note beats per bar – with a tempo direction of 𝅗𝅥 = ca.88, around eighty-eight half-note beats per minute.

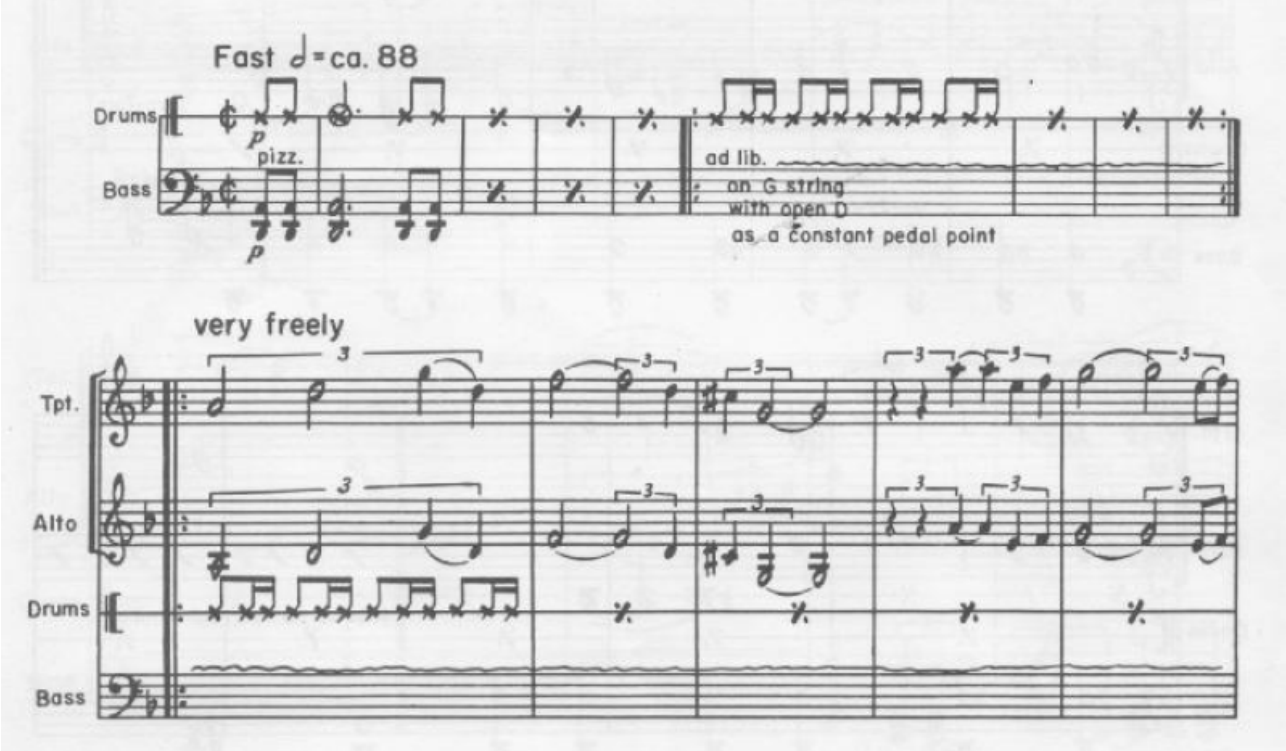
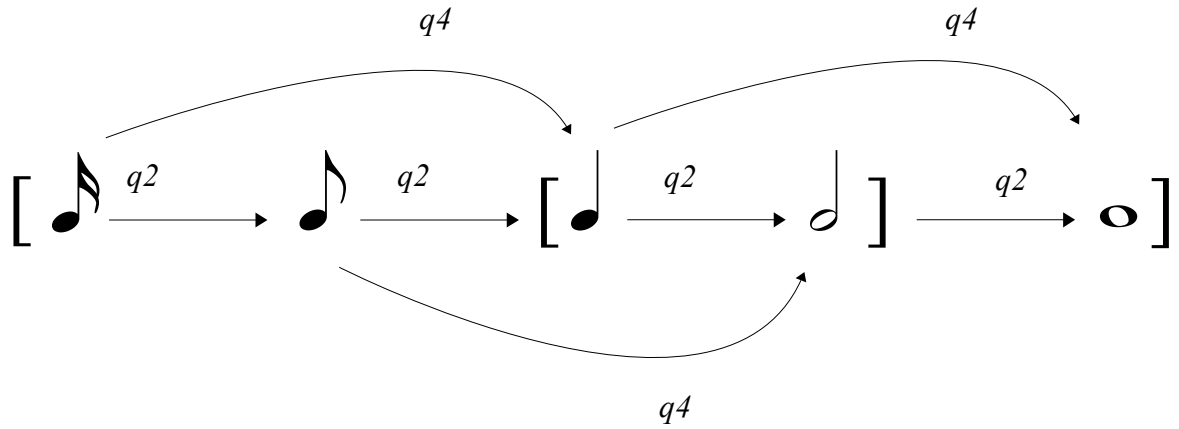


fig. 8.4

In the analysis implied by Schuller's transcription, with the beat as half-note (as given by 𝅵), the implied metrical chain is (♩, 𝅗𝅥, 𝅝) – a half-note beat, a quarter-note feel (though the triplets in the melody might also imply a compound, triplet feel) and a whole-note metrical duration producing, Schuller's “fast” indication notwithstanding, a “slow” tempo – “it sounds like a ballad”. With, however, the beat as eighth-note (as implied by the ride cymbal), and four beats in a bar, this implies the chain (𝅘𝅥𝅯, 𝅘𝅥𝅮, ♩, 𝅗𝅥), with the “feel” as sixteenth note, and the metrical duration as half-note, thus producing a “fast” tempo; “they're playing as fast as they can play”, as Ornette says of “Cherokee”. If we analyse (by means of division) the beat duration of the slow chain (half-note) by the beat duration of the fast chain (eighth note), it produces, again, as with Cherokee, the quotient *4*. The “ballad” tempo is “four times as slow”, or the “fast” tempo is “four times as fast”.

346 Schuller, *A Collection of the Compositions of Ornette Coleman*, 17 – 19.



4. Two “tensions”

At the level of the metrical chains that lie within our durations space, we can thus identity at least two kinds of “tension”.

1) On the one hand, there is the tension between two different chains lying within the space, where each of the durations of one chain are related by means of an integer quotient – as with *q4* above – to each of the durations of the other, and such that there exists a third chain lying within the space that contains them both. Given the existence of these relations between chains, this is the least “tense” form of tension.

2) On the other hand, there is the tension between two chains that lie within the duration space – say the chain for 4/4 and the chain for 6/8 – where not all of the durations of one chain are related to all durations from the other chain by means of the integer relation, correlative to the fact that 4/4 and 6/8 represent different approaches to metrical feel (simple and compound). This constitutes a more “tense” form of tension, because of the absence of these relations.[347]

However, in spite of these two forms of *tension*, the first represented with respect to “Cherokee” and “Lonely Woman” by *q4*, it is possible to see that both these forms of tension emerge *internal to a wider space* – there is a difference between one chain and the other, with different degrees of intensity, but these differences, these disunities, nonetheless emerge *internal to a wider unity* – the unity represented by the duration space, which means that, even if two durations are not related directly, there will, at some point in the space, exist a third duration to which both are related by means of the integer relation that characterises the space. The question that faces us with respect to “Lonely Woman” is thus the following: is this really enough? Do such conceptions as implied by Cherokee, on the one hand, and Schuller's transcription, on the other, really account for the

347 These two “tensions” might be seen as part of a wider distinction internal to the space between identity quotients (*q1*) non-identity integer quotients, non-integer quotients, and so on.

“tension” to which Ornette refers, the tension at the heart of “Lonely Woman”, between the time implied by the drums and the time implied by the melody instruments – a tension that Ornette sees in all love conflicts?

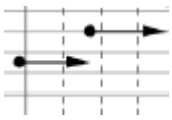
5. Analysis of “Lonely Woman”

The transcription

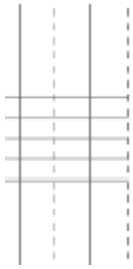
Let us turn, for a moment, to our transcription of the performance of “Lonely Woman” that appears on *The Shape of Jazz to Come*. *Fig. 8.5* (starting on page 146) shows a transcription of the performance of the melody to the “*A*” section of “Lonely Woman”, as well as the first repeat. On the left, is the *A* section played for the first time, and on the right is the *A* section played for the second time, juxtaposed for the sake of comparison. The layout is as follows:

- Timings shown on the horizontal timeline are the timings as they appear on the original recording, given with the unit as seconds.

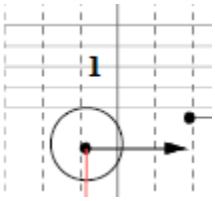
- Pitches are transcribed as nodes on the staves, which are also the initial points of their real-time durations, with the tip of the arrow-head their real-time endpoints.



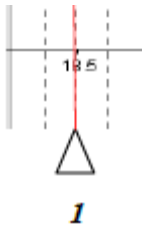
- Black, vertical, dashed lines show those cymbal hits taken to be “on the beat”, where the beat is an eighth note, as shown in Schuller's score. This is, of course, not the beat as given by cut common time, but the beat given where the tempo is interpreted as very fast, with the beat as an eighth-note, as in our analysis above. Vertical lines that are not dashed show cymbal-hit beats where the nature of the recording – in particular, the number of coincident sounds – made it nearly impossible (for this transcriber) to determine aurally the position of the cymbal with respect to the timeline.



- The circled pitches show those pitches that coincide with the first beat of a bar in Schuller's score, with the numbers above indicating which bar that is.



- The numbers below the triangular, upwards-point arrowheads at the bottom of the score show the bar number as implied by the drums; if the vertical lines show eighth-notes, eight eighth-notes add up to the metrical duration, as Schuller proposes, and thus a new bar starts.



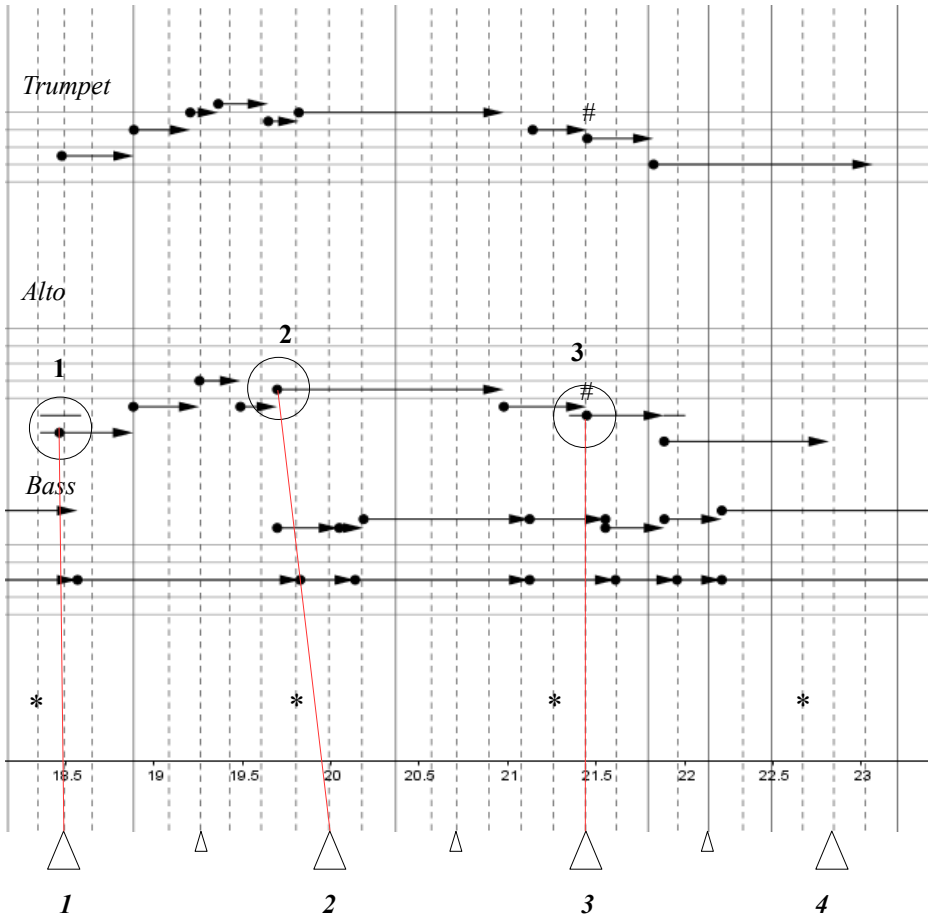
- The positions of the triangular arrowheads are adjusted to coincide with the initial note of the melody, as heard on the recording. Smaller arrowheads show the second beat of the bar, as implied by the drums.

- The asterixes on the vertical cymbal lines show a Schullerian bar made up of eight cymbal eighth-notes if the adjustment just mentioned is not made. It thus shows the temporal "drift" with respect to the drummer's realisation of Schuller's metrical duration.

In effect, the relation between a large triangular arrowhead and a circle with the same value shows the extent to which the performance coincides with Schuller's analysis – at least with respect to the first beat of each bar. Vertical red lines joining triangular arrowheads to circles show coincidence, whilst red lines that are not vertical show non-coincidence with respect to Schuller's analysis. Where corresponding lines in the first and second performance of the melody appear as (roughly) parallel, this shows (close to) the same relative position with respect to Schullerian time – where parallel lines are not vertical, this shows that they are "out by (close to) the same amount".

"Lonely Woman" – phrase 1

1st time



2nd time

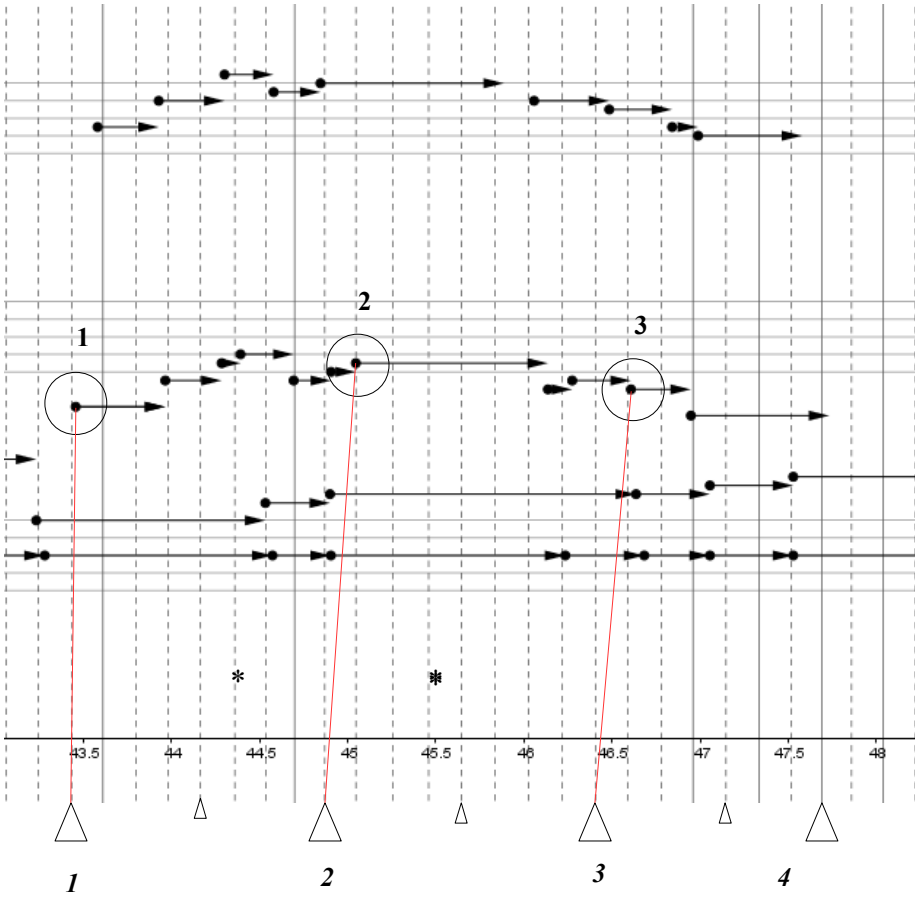
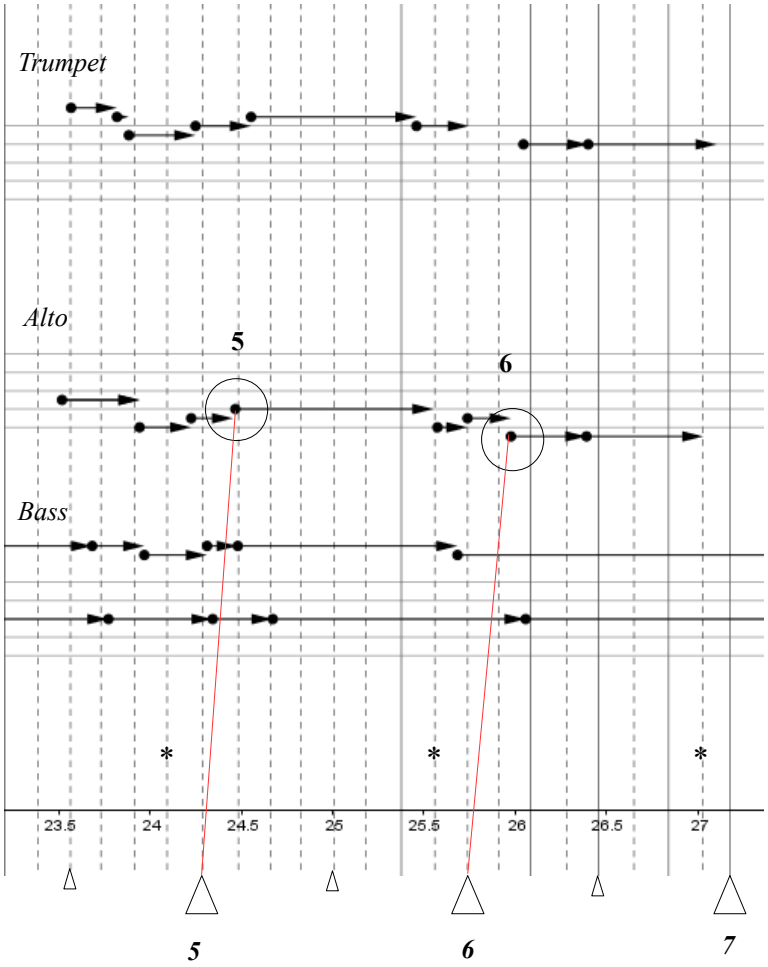


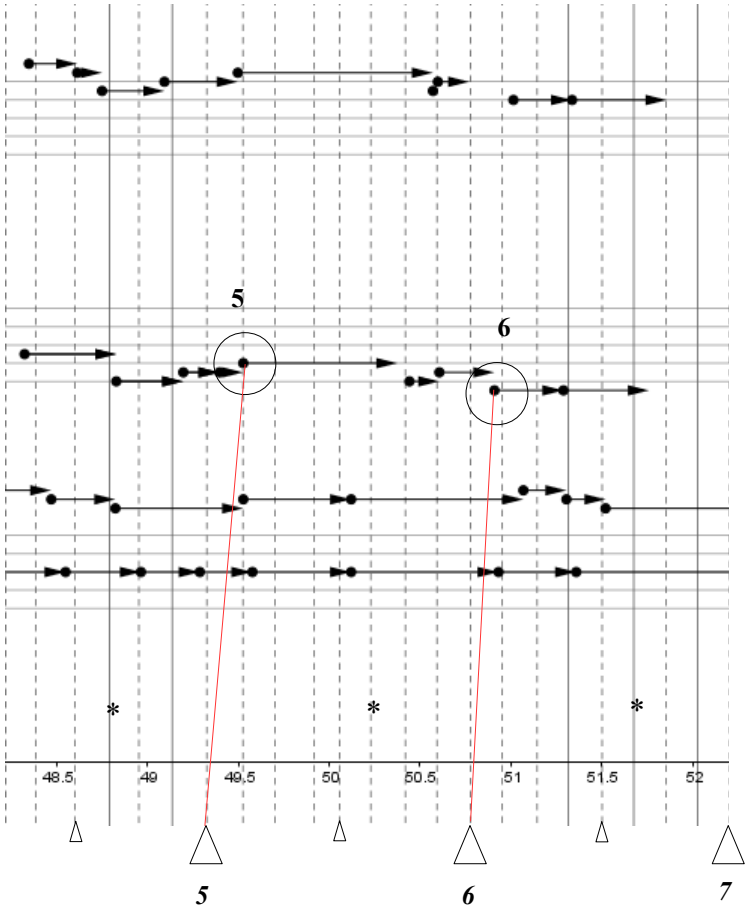
fig. 8.5

"Lonely Woman" – phrase 2

1st time

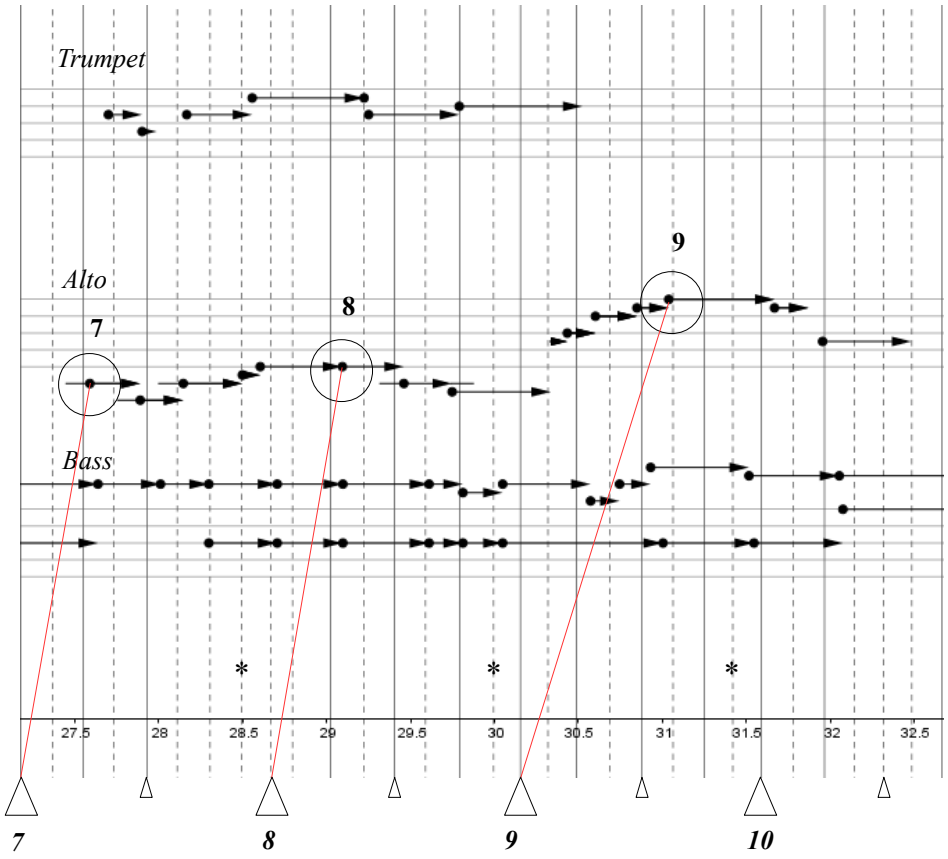


2nd time

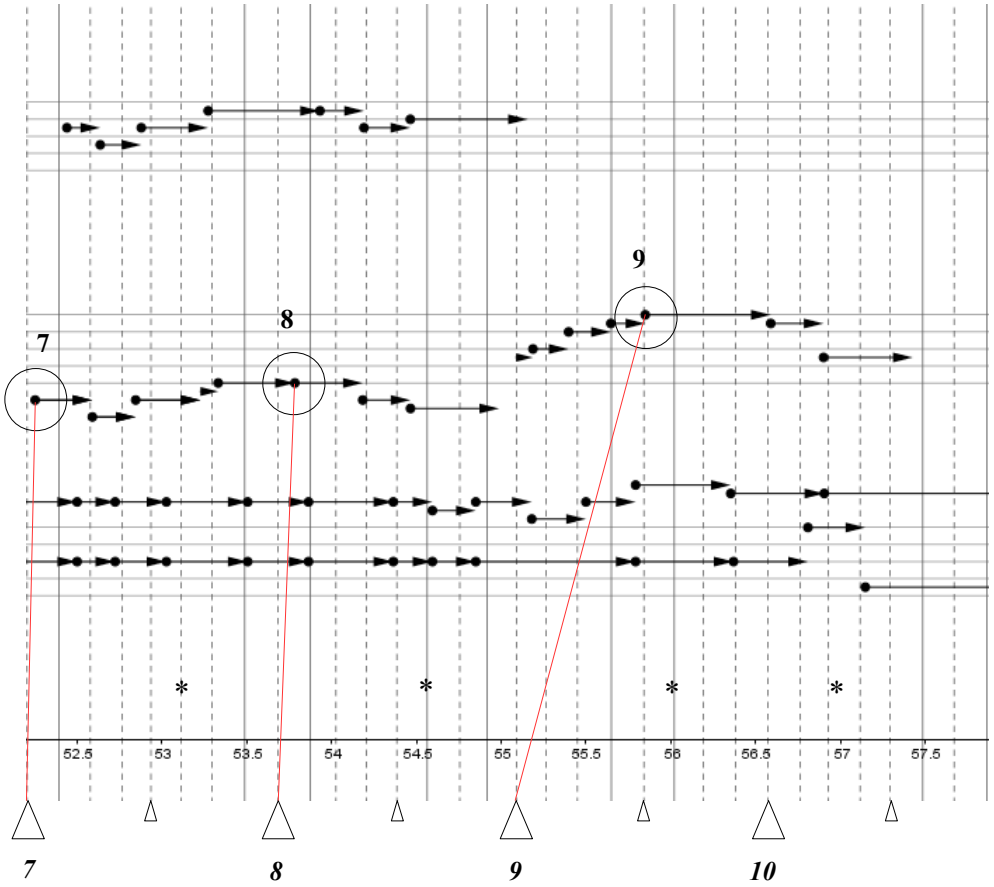


"Lonely Woman" – phrase 3a and 3b

1st time

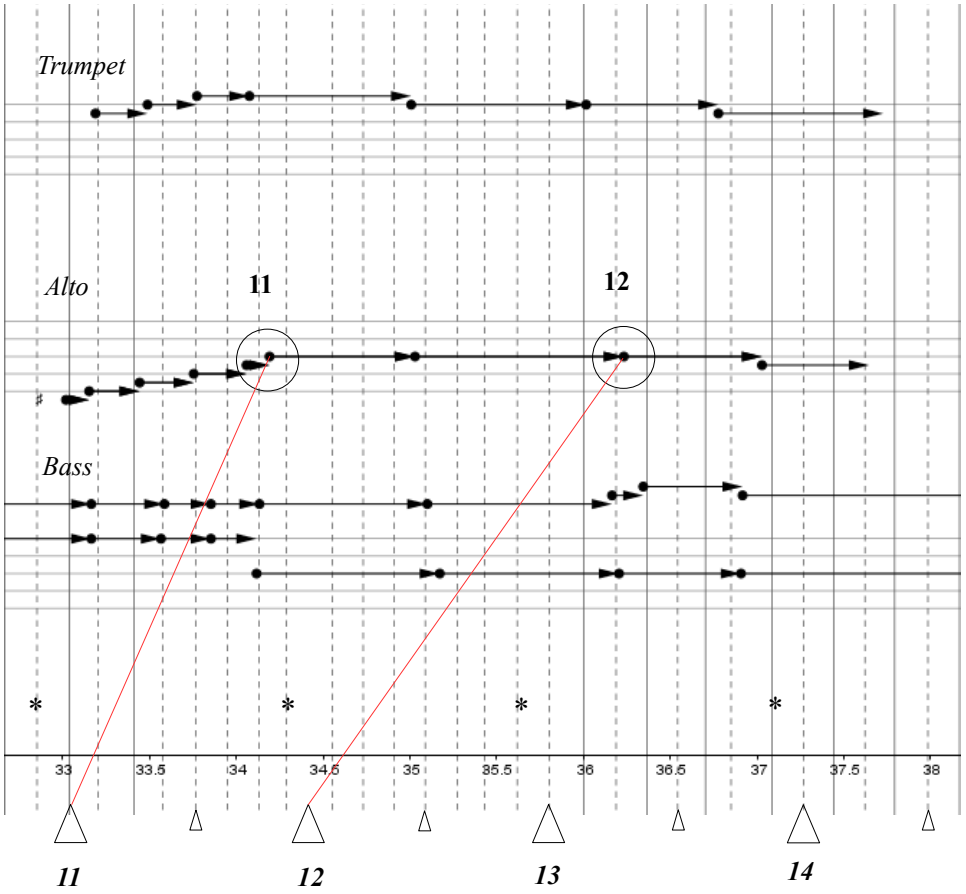


2nd time

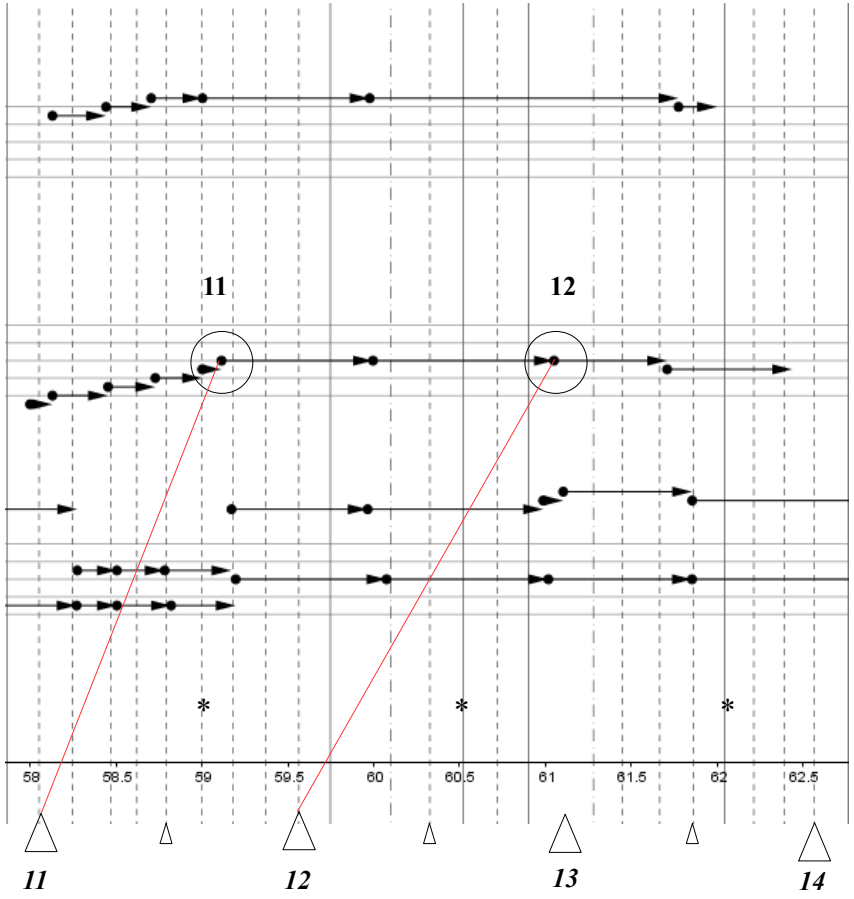


"Lonely Woman" – phrase 4

1st time

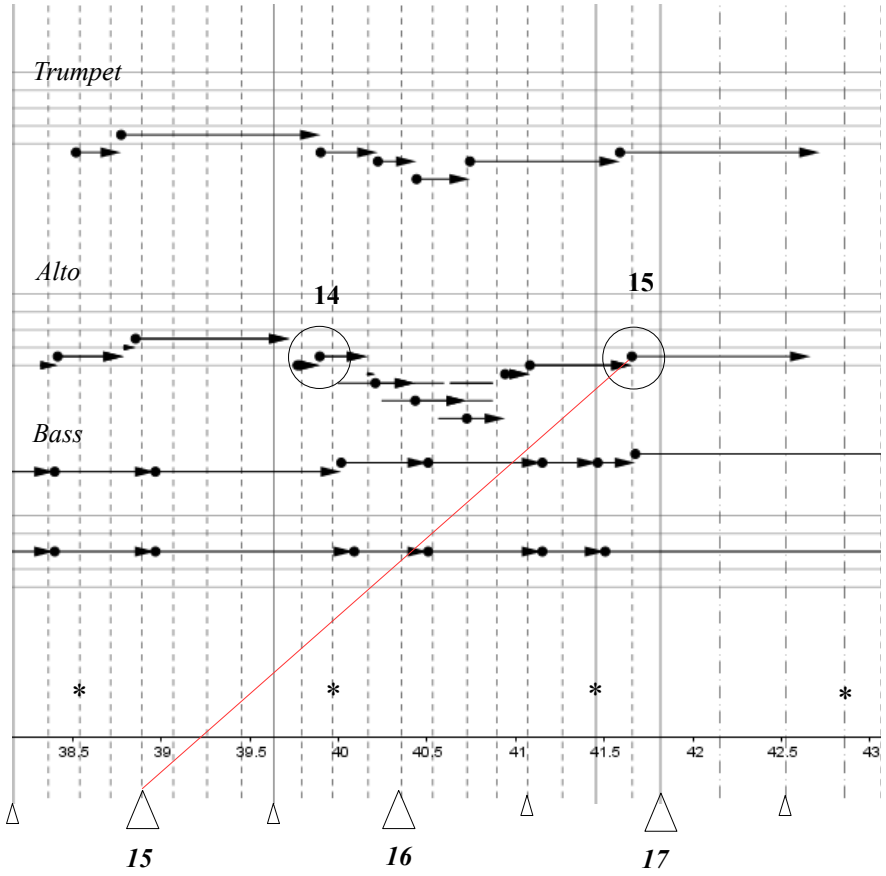


2nd time

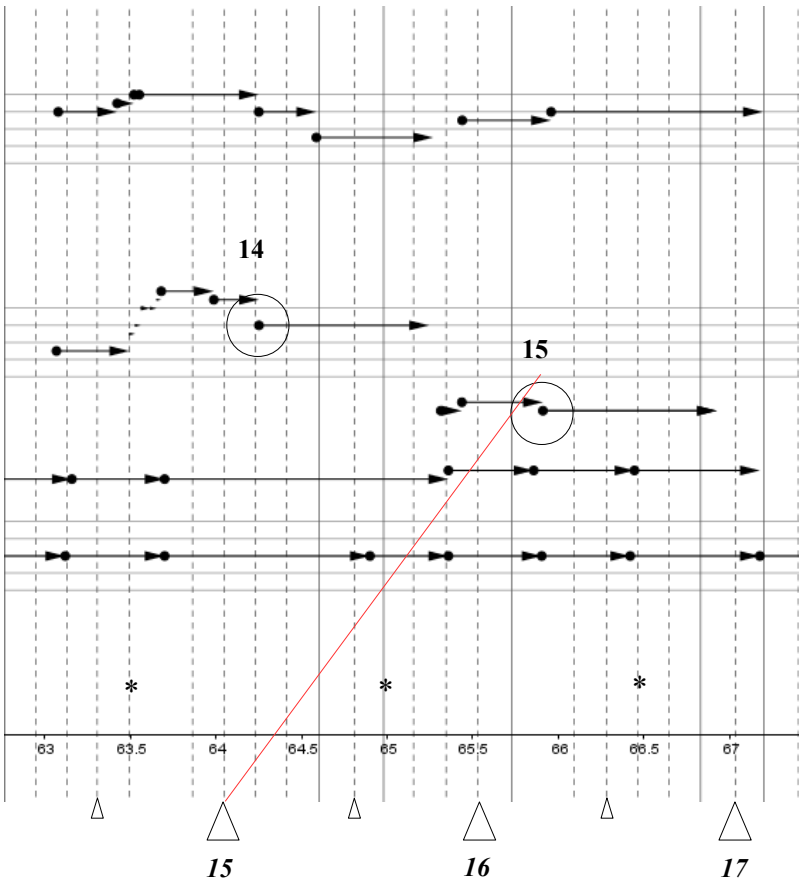


"Lonely Woman" – phrase 5

1st time



2nd time



Analysis of transcription

Looking first at the relationship between the large triangular arrowheads and encircled pitches, it is possible to see that points of near-coincidence do occur; disregarding the coincidences at 1^{Δ} (produced artificially by the author, as explained above), and using a somewhat generous notion of "proximity", there are near-coincidences at 3^{Δ} (1^{st} time), as well as at 5^{Δ} and 6^{Δ} (both times) and 7^{Δ} and 8^{Δ} (2^{nd} time). However, it is also possible to see that not only are the proximities at 7^{Δ} and 8^{Δ} (2^{nd} time) not matched by corresponding proximities at 7^{Δ} and 8^{Δ} (1^{st} time), but there are many other points of divergence at 9^{Δ} (both times), with progressively greater divergences through 11^{Δ} and 12^{Δ} to 15^{Δ} (both times), as reflected by the progressively slanted red lines, joining the first beat of the drum bar (marked by arrowheads) to the first beat of Schuller's bar (marked by circled pitches). By simply paying attention to these red lines, it is thus already clear that there is something significantly amiss with Schuller's transcription, the direction to play "very freely" notwithstanding. But what is the precise nature of the problem? If Schuller's analysis entails a number of assumptions about the nature of the (temporal) space, the metre internal to that space, the specific durations chosen to represent note lengths, as well as the positions given to these durations in the measures that realise the metrical chains, at which level is the problem with Schuller's analysis to be situated? Where does he go wrong?

Let, us, at least for a moment, persist with the assumption, as implied by Schuller's transcription, that the durations played by the melody instruments, on the one hand, and the durations played by the drums, on the other, belong to the same space – the duration space we presented earlier. If we are to account for the dislocations we have discussed in terms of this assumption, a number of possibilities present themselves.

1) A first possibility, which we will disregard immediately, is that Schuller's temporal conception, as expressed in his transcription, is the right one, but that Ornette's group simply failed to realise it correctly. Whilst starting well, producing the near-coincidences mentioned above, after a while, the temporal relations became too difficult to maintain, and the different temporal strands began to dis-align.

2) A second possibility is that the metre Schuller has identified – *alla breve* – is correct, but the way Schuller has aligned the melody with the resulting bar space is not. Here, even the specific durations Schuller has chosen for the melody may broadly be correct, with adjustments to be made merely at the level of those notes heard on the first beat of the bar, and so on. This possibility would be given particular force if we were to discover a coincidence between the alignments of the first and second times – if, in other words, they were found to be "in or out by (close to) the same amount". Whilst such coincidences or near-coincidences can be found – a case for these could be made up until 6^{Δ} – at 7^{Δ} things begin to drift again, reaching a pronounced dis-alignment of (dis)alignments at 15^{Δ}. However, even if we were to discover a particular alignment of dis-alignments – if, in other words, the first and second times were found to be "out by the same amount" – this would not *necessarily* prove the thesis represented by our second possibility. For instance, the superimposition of two temporal conceptions consistent *internal to themselves* with respect

to tempo, duration, and so on, regardless of how such features were constituted, would, quite contingently, produce a consistency of alignments *between* these temporalities, with no necessary implication that this consistency was the product of a shared space.

3) A third possibility is that, whilst all of the durations heard are from the same duration space, the metre is incorrect, such that the grouping of durations produced by the bar realisations of this metrical chain result in the misalignments we have discussed. The single durations "go into" a single metrical duration, but not the one Schuller has identified. Again, such a possibility would be given force if we were to discover a consistency between the alignments of the first and second time, indicating that, whilst dis-alignments exist with respect to Schuller's score, there exists, nonetheless, another metrical concept of which this consistency is evidence.

4) A fourth possibility would be that, whilst we retain the unity of a shared duration space, everything else about Schuller's transcription is incorrect – the specific durations he has chosen, the metrical durations which contain them, the way these durations align with the bar coordinates, are all wrong, such that we are obliged to start again, rediscovering the specific elements that constitute the temporal relations characterising the temporal space of the piece. However, here there is a fear, which, in fact, haunts all of our possibilities, that the "search" for new metrical limits, for instance, *is in danger of producing its object*, that our attempts to simply "observe" some, for instance, metrical divisions in fact imposes these divisions on the music, such that they are then experienced as an immanent property of the music itself.

Given these reservations, produced not just by the dis-alignments between score and performance, but also the dis-alignment between alignments internal to the performance itself, it becomes very difficult to support the "quotient" interpretation, related to our analysis of "Cherokee", that we have here been pursuing in relation to the temporality of "Lonely Woman". And, in fact, if we turn to Ornette's discourse about his music, we find many allusions to time and temporality, many references to metre and rhythm that call such a relation into question, implying new ways to listen to the time of Ornette's music, and "Lonely Woman" in particular, as well as new ways through with respect to the problem of "tension" we have been discussing, to be found, Ornette says, at the heart of conflicts in love.

6. A natural, freer time

In his interview with Gunther Schuller from 1960, to which we have now referred many times, the conversation turned to the question of time, and, in particular to the question of the disposition of phrases with respect to beats and bars. "In other words", says Schuller, attempting to draw the different strands of Ornette's argument together, "the superimposition of a mathematical scheme over something […], over music, is very foreign to you." "Yes, it is", Ornette replies, before calling into question the mathematical distinction between different forms of metre:

> In fact I can't really conceive how all times can be played in different accents when

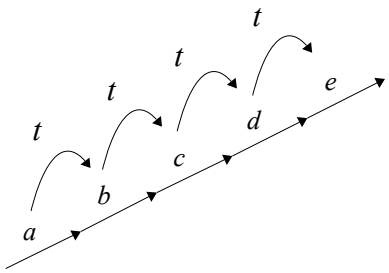
> mathematically you could figure out all of them as being the same thing. If, you know, if you take 4/4 time and you break it up to 2/4 […] you can make all of the times come out mathematically the same thing. So that really takes you back to – none of them are really different, if you're going to do it mathematically.[348]

Spread rhythm

Ornette developed these ideas in another interview with the critic, Nat Hentoff, calling into question the very notion that his music could be "timed", that the durations that constitute it can be subject to some kind of temporal *measure*. "My music doesn't have any real time", he says, "no metric time". "It has time, but not in the sense that you can time it."[349] If "metric time" implies the measure that pertains to a musical *metre*, the time that pertains to Ornette's music, he says, is "a natural, freer time", a time "more like breathing". "People have forgotten", he says, "how beautiful it is to be natural".[350] In this same interview, Ornette proposed a new temporal concept, which he calls "spread rhythm", and which, perhaps, better characterises his music. "I like spread rhythm", says Ornette, "rhythm that has a lot of freedom in it" – a rhythm he opposes to "the more conventional netted rhythm". "With spread rhythm", he says, "you might tap your feet a while, then stop. Then later start tapping again". "Otherwise", he says, "you tap your feet so much, you forget what you hear. You just hear the rhythm".[351]

Netted rhythm

Let us first conceive *netted rhythm* as the space of a rhythm caught in the net cast by a tapping foot. As with the realisation of a metrical chain, we can conceive of the net cast by a tapping foot as a continued analogy, in Hamilton's sense,[352] the repeated transference of a relation-duration, *a*, such that the endpoint of *a* coincides with the initial point of its immediate repetition, *b*, and without any *necessary* implication of a longer metrical duration, and thus of metre.



In his interview with Schuller, Ornette linked this tapping foot – "patting your feet" – to *ideas*. "When you're patting your feet sometimes", he says, "the quarters [...] don't sound like quarters any

348 Coleman, interview by Schuller: 16.16 – 16.43.
349 Coleman, liner notes, *Croydon Concert.*
350 Liner notes, *Croydon Concert.*
351 Liner notes, *Croydon Concert.*
352 See page 95-96 of this thesis.

more, and in fact they just sound like what you hear it as being […] it takes on, like, an idea, more than just what it is."[353] Given this relation between a tapping foot and ideas, which we could conceive in the terms offered in chapter VII, let us say that a rhythm is caught in the net cast by a tapping foot insofar as the durations that constitute the rhythms are experienced as being with respect to – situated by – the net duration, *a*. If *a* is a duration from the duration space earlier, these situation effects can be given as the inverse form[354] of the quotient that relates each duration to the net duration, *a* – as, in other words, Ornettian Ideas. With *a* as a quarter note, an eighth-note, half-note and whole-note are caught in the net cast by the foot tapping quarter notes insofar as each is experienced as situated with respect to that tapping, as shown in *fig. 8.6*, where ♪, 𝅗𝅥 and 𝅝 carry ½, 2 and 4 Ideas respectively, indicating that they are half, twice and four times the duration of *a* (♩).

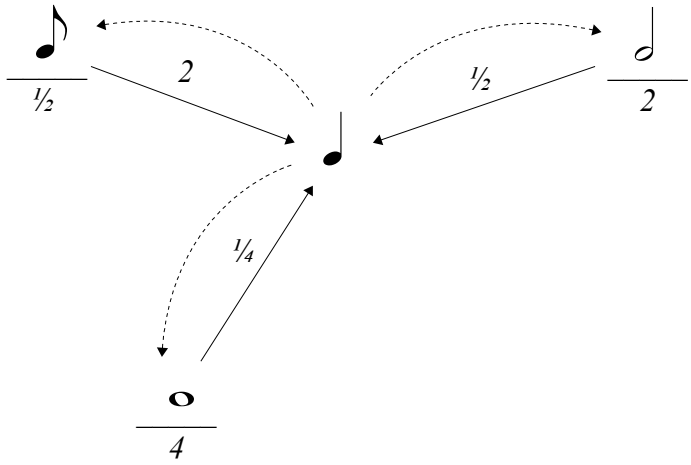


fig. 8.6

353 Coleman, interview by Schuller: 23:25 – 23:29. In fact, there is some equivocation in Ornette's explanation, between the "sound" or "idea" a duration acquires when a performer pats their foot, on the one hand, and how a duration is *actually played*, on the other. Ornette begins with a reference to "sound": "when I tried patting my feet, I found out that it got a different sound, what I played". However, this immediately shifts, such that a patting foot will cause a performer to *actually play* notes longer or shorter: "if you're playing quarter notes for two bars [...] if you don't pat your feet you'll play those quarter notes like detached in some way that you know you're playing all quarters". However, there is then a reference to the sound of "ideas" distinct from the sound of what is actually played, from "what's there" : "when you're patting your feet sometimes the quarters, it don't sound like quarters any more, and in fact they just sound like what you hear it as being, you know, like it takes on like an idea, more than just what it is. Like it is this thing about music where that you can take anything that you've heard and if you know how to blend it with your own emotion and intelligence it can become an idea to you [...] more than just what's there." 22:36 – 23:45.

354 "Inverse" in terms of vectoral *differences* means the opposing *direction* , as indicated by the signs for positive (+) and negative (-) when attached to a vectoral distance. "Inverse" in terms of *quotients* means the relation between *reciprocals* – i.e. the distinction between, for instance, 2/1 and ½.

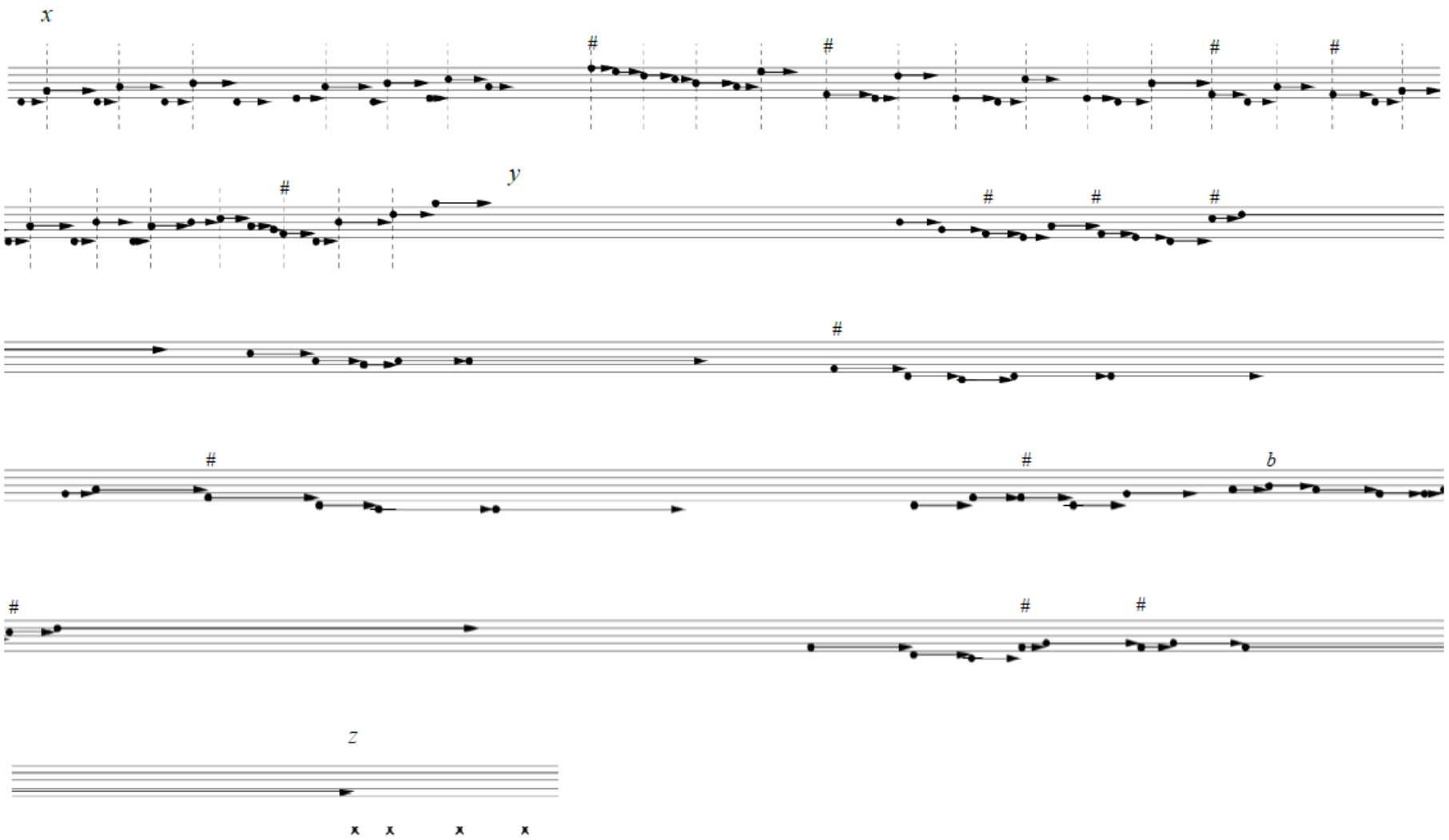


fig. 8.7. “The Sphinx”

Fig 8.7 shows shows the melody to "The Sphinx"[355] caught (from point *x*) in the net cast by a tapping foot, with the net shown by the vertical, dashed lines, which mark the initial and end points of the net duration realised as a continued analogy. Vertical, dashed lines, in other words, represent "beats". At *y*, the foot stops tapping. The durations represented in this transcription are "real" durations (durations calculated using clock time and represented as spatial extension), not quarter notes, eighth notes, and so on, though a tapping foot may imply a beat conceived in these terms. At *z*, the foot starts tapping again.

So, if *netted rhythm* allows us to account for the time of a tapping foot, and if the net cast by a tapping foot can be conceived in terms of a (repeated) duration from our duration space, with rhythms "caught in the net" insofar as they relate themselves to the net duration, thus carrying durational Ideas, in what space are rhythms caught when the tapping stops? What time orients them in the interval between the time of tapping, telling them *when* they are, in what kind of temporal space they are oriented, and to which point of that space?

Breathing in space

In his interview with Schuller, Ornette suggested the presence of another "measure", one, in fact, already alluded to in his interview with Hentoff, that allies durations to the coordinates of breath, in what appears to be the most straightforward of relations; if there is no more breath, there is no more passage, such that the endpoint of a passage is coordinated with, takes as its coordinate, the endpoint of an expiration, with indifference to the disposition of the phrase with respect to the coordinates of metre – of beats and bars and the boundaries they imply.

> I don't concentrate on mathematical things to express musical things. I just do it from the point of view of breathing in space […] When I play a passage, when the breath leaves the passage, there's no more passage. But I don't think about in the sixth beat of the bar that I've got to start breathing here to do it, you know.[356]

So, if we take these two conceptions together – *netted rhythm* – the space of a rhythm caught in the net cast by a tapping foot – and *breathing in space* – phrases coordinated with respect to the boundaries, the endpoints, of breath, then we have a way to conceive of the alternating space of *spread rhythm* – first a space of the tapping foot, then the space of breath, then the space of a tapping foot again, the ordered movement from one to the other, each following the other in a temporal sequence. However, if *spread rhythm* is conceived in terms of such an alternation, as the space of a tapping foot immediately followed by the space of a respiratory measure, and vice versa, it could also offer a new way to hear the temporal aspect of "Lonely Woman", not as an *alternation* of spaces, not the spaces each "next" with respect to the other, but as these two spaces *superimposed* – "next to" with respect to one another "vertically", rather than "horizontally", two different times, two different kinds of temporal space, in other words, *at the same time.* Now the "tension" between the time of the drums and the time of the melody is not a tension internal to the

355 Coleman, "The Sphinx", *Something Else.*
356 Coleman, interview by Schuller: 15:26 – 15:48.

same space, not a tension that can be expressed by means of a relation (such as *q*4), relating two points internal to the same space, but as the tension, the disjunction, *between two entirely different spaces* – the space of a tapping foot (the drums), on the one hand, and the space of a respiratory measure (the melody instruments), on the other.

7. Hasn't any relation

During his interview with Ornette, Schuller turned the conversation to the question of what he called "continuity", of how to listen to the continuity of Ornette's music. If some listener's persisted with the attempt to relate the ideas in Ornette's improvisation to the composed theme – an attempt that at times produced a feeling of frustration, of failure – Schuller proposed a new way of listening, a new way of relating, in which the listener related each new idea not to the "expositional idea" (the composed theme), but to its immediate consequent, or, rather, to its immediate antecedent. "I know that the way that I listen to your music, Ornette", he said, "is to take each incident, each note, each little idea, group of notes, by itself and relate it to what follows. Or rather, relate the new idea to the one just previous to it".[357] "I notice sometimes, for instance", he said:

> ...you'll do a phrase and you'll end on a certain note, and instinctively your next phrase, which may be an entirely different shape and may be louder or softer, it may be entirely different, but it may start with that same note. […] There's always some kind of relationship. And it never is the same. Sometimes it's the note […], sometimes it's the loudness or the tone maybe, but there's some kind of relationship...[358]

"There's always some kind of relationship. And it never is the same..." This elegant theory, with its attention to local relations, rather than the relation to an expositional theme, was, of course, a significant development of the ideas Schuller had proposed in relation to the "thematic improvisation" of Sonny Rollins, in which, unlike the harmonic orientation of "chorus improvisation", the thematic material constitutes a kind of constant "ideational thread",[359] a "fountainhead" "from which issues most of what is to follow".[360] However, in his attempt to find new ways to listen to Ornette's music, retrieving relations where it was assumed that there were none, implying a failure, a falling short, at the level of what constituted the unity of theme and improvisation, Schuller had, in fact, *himself* fallen prey to a failure of listening, had himself failed to listen, a failure that betrayed, perhaps, a desire *not* to hear, a desire not to have something Ornette had only just said to him – something about relations in his music – drawn to his attention. In these words of Ornette's there is no failure to produce an expected relation, nor is there a relation to be discovered where it had been assumed there was none, but, rather, there is the attempt, the *deliberate effort*, to play *the absence of a relation*, to play a *no relation*, an idea that *"hasn't any relation"* to the next idea, though, musically, there is a drawing together:

357 Coleman, interview by Schuller: 32.32 – 33.26.

358 Coleman, interview by Schuller: 33:43 – 34.17.

359 Schuller, "Sonny Rollins and Thematic Improvising", 241.

360 Thematic Improvising", 243. Schuller's theory is a precursor to the Jostian approach we discussed on page 12-13, though Jost does not mention Schuller in his text.

> I try to play an idea that hasn't any relation to the next idea but musically they come together.[361]

Of course, in Schuller's elegant theory of Ornettian relations, to "have a relation" means to have a "quality", a "property" *in common* – "relation" thus implies a point of intersection between one idea and the next. However, the notion of "relation" is, of course, much broader than this, going well beyond the idea of "something in common". In terms of our duration space, two points "have a relation" (as represented by the presence of a quotient vector connecting them) if it is possible to multiply one of these durations by a positive integer (an integer quotient) in order to produce the other duration. Thus ♩ and 𝅗𝅥 "have a relation", insofar as it is possible to multiply ♩ by a positive integer – 2 – in order to produce 𝅗𝅥, a half note. ♩ and ♩., in this sense, "haven't any relation", insofar as ♩. is produced by multiplying ♩ by something other than a positive integer. In this precise sense, it would thus be possible to determine a distinction between a "hasn't any relation" *internal* to a space, and a "hasn't any relation" between a point internal to a space and one *external* to it – now "hasn't any relation" implies both an interior "no relation", as well as a "no relation" implied by the crossing of a boundary between inside and outside, between a point experienced as interior to a space, and one experienced as exterior, and even in another space altogether.

As such, it is possible to see that "hasn't any relation" is directly related to the question of "tension" we have been discussing. "Tension", as we have seen, implies; first, a "difference", a *relation*, indicating that the durations *are* related, but are not the same duration (as represented by an integer quotient other than 1); second, the absence of such a relation *internal* to the space (the absence of an integer quotient, but the implication of a non-integer quotient); and, third, the absence of any such relation relating the points of that space to points *external* to that space, between points, in other words, of two entirely different spaces. The temporal ideas that constitute the "two times" of "Lonely Woman" which we have conceived in terms of *spread rhythm* – the time of the tapping foot "next to" the time of a respiratory measure – are in "tension", in this third sense, as two spaces, constituted in entirely different ways, and between the points of which there *isn't any relation*; the points of *netted time* haven't any relation to the points of a respiratory measure – the relations these spaces imply are entirely different, bearing no relation to one another. In this sense, "hasn't any relation" *is* the tension that Ornette sees in all love conflicts, where "hasn't any relation" implies the absence of a relation between the points of two distinct spaces, two distinct times, the time of rhythms caught in the net of a tapping foot, on the one hand, and the time of breath, on the other.

Of course, the signifier, "next", which describes the being of an idea with respect to another idea, to which it apparently hasn't any relation, *already implies a relation*, as we have seen – a relation of order, in which what comes "next" with respect to some point, *x*, is the point, *y*, *immediately consequent* with respect to *x* at the level of that order (see page 61). With the idea of "next", or "next to", to include not only points immediately consequent with respect to a point, but also points *coincident* with respect to another point ("next to" in terms of a "vertical" "spatiality"), as in the case of "Lonely Woman", then two ideas which haven't any relation to one another already "come together" at this minimal level, are already related at the level of their being "next to", coincident

361 Coleman, interview by Schuller: 33:37 – 33:43.

with respect to one another in the temporal order that contains them both. In this sense, the two temporal ideas that constitute "Lonely Woman" – the space of a tapping foot, the space of a respiratory measure – although they *haven't any relation* to one another, although they are entirely distinct spaces constituted in entirely distinct ways, this temporal overlap, this "happening at the same time", produces a vast set of coincidences, a vast set of relations of temporal proximity, as the points of the two different spaces come together, touching one another at points of contingent, temporal intersection. These purely *coincidental* relations invite other relations, of course, other points of contact; they constitute the pretext for the points of one space, for instance, to be drawn contingently into the space of the other, such that, for a moment, the melody finds itself caught in the net of the tapping foot, before disentangling itself, slipping through. Or, perhaps, the points of the space of the tapping foot find themselves, for a moment, drawn into the long durations of the space of a breath, its extended exhalations, which know nothing of the mathematics of the foot and its tapping.

8. What does it mean to follow?

So, if, in our discussion so far, the notion of *relation* has offered us the means to deal with *going*, with "going somewhere", insofar as the relation as "vector" constitutes the *vehicle*, the *means of movement*, of going, producing a "where to go" as its endpoint, what are the consequences for this movement if the relation, the means of movement, is missing? What will tell us "where to go" in the absence of a relation?

Of course, if *netted rhythm* is conceived in terms of a continued analogy, in Hamilton's sense, then all of the imperative effects, the "effects of direction", that pertain to the transference of free relations pertain here, for whenever the endpoint of the net duration falls, the next endpoint will simply be that point "plus" that duration, to recall a term from Hamilton's arithmetic (see pages 72-73). As with a *free vector*, when or where the relation "goes" *first* is not determined, but as soon as it is positioned, as soon as it is realised by some temporal point, the position of all future points follow as a necessary consequence of this initial choice, they are all, after this moment of initial contingency, "given in advance" (see page 117). With *breathing in space*, on the other hand, breath indicates the intervention of an entirely different temporal measure; now "where", or, rather, "when", a point is to "go" is an effect of the contingencies of breath, the durations of which are *transferred to the phrase*, such that the duration of the phrase now emerges as an effect of this transference, as the manifestation of this more "natural, freer time".

If the time that pertains to "Lonely Woman" is, however, the time of *spread rhythm*, in which there is an alternation between these two entirely different forms of time, constituted in entirely different ways, and now superimposed, to "go where I go" is to go from a temporality, *X*, to a temporality, *Y*, *with which temporality X "hasn't any relation"*, with which it is in a kind of fundamental "tension" – to which it is "related", we could say, by a kind of *no relation*. Insofar as this alternation of non-related temporalities can be related to the tension we have been discussing – the tension that Ornette has said he is sees in all love conflicts – to "go where I go" thus means to go somewhere – to some temporality – *such that this going, this movement, manifests this tension*, such that the non-relation of times from and to which I go manifests the "no relation" at the heart of the conflicts of love. In

this sense, to follow – to where I go – means to go *such that this "no relation" at the heart of love is "transposed"* – transferred – *from the field of love to the field of music*, such that music becomes the means by which the *no relation* of love manifests itself, by which it is expressed.

There is thus a tension at the heart of conflicts in love that it is the work of music to express – a tension we can hear in the temporality of "Lonely Woman", but perhaps not only there. For Ornettian *spread rhythm* would be a means to hear many of Ornette's pieces – the relation between the fragments that constitute "The Sphinx", as we have seen, but also the temporality of pieces such as "Congeniality", in which the alternating character of spread rhythm can be heard in the shift from one fragment to the next.

Closing remarks

So, if thus far we have dealt with *tonic relations*, implying points of (external) convergence, *free relations*, implying points of (internal) convergence, where those points are *relations*, *solitude relations*, produced by means of a plenitude cured by lack, by the lack of a relation, and, just now, *non-relations*, the non-relation produced between points that "haven't any relation", we now turn to our final relation, so important in Ornette's universe, a relation that bears on the very question of unity, of what draws points together – *unison relations.*

IX. Skies of America: unison relations

1. Introduction

The sensation of unison

"The Harmolodic Theory", the theoretical text Ornette promised in the liner notes to *Skies of America*, has never appeared, at least not yet, though in 1983 he would publish an article for *Downbeat*, entitled, "Prime Time for Harmolodics"[362] – a title that played on *Prime Time,* the name he had given to his band of that time, as well as on, perhaps, "Prime Design", the title to the text published in 1960 by Buckminster Fuller, the man whom Ornette would once call his "main hero".[363] At the start of his difficult and, at times, enigmatic text, Ornette presented direct from Hermann Helmholtz's opus on tone and its sensations, first published in 1863 and translated into English as *On the Sensations of Tone*, the first sentence from the first chapter of the first part of Helmholtz's work, dealing with the composition of vibrations and their relation to tone and its qualities:

> Sensations result from the action of an external stimulus on the sensitive apparatus of our nerves.[364]

However, if Helmholtz's account had given priority to *sensation*, "in my musical concept", says Ornette, "not only the sensations of tone to the nerves is released, but the very reason for the use of tone", which is, he says, "the logic of ideas put into a single or collective unison".[365] This shift, from sensation to reason, from the sensation of tone to the reason for that sensation, which has to do with the "logic of ideas" put into some kind of relation, to which he gives the name, "unison", then becomes the basis for a definition of "harmolodics", the signifier Ornette has used to name his approach. "Harmolodics", says Ornette, is:

> ...the use of the physical and mental of one's own logic made into an expression of sound to bring about the musical sensation of unison.[366]

And the word, "unison", refers, he says, to "the sound of one's own voice."[367]

What to make of these enigmatic statements? What is the "sensation" to which Ornette refers – the "sensation of unison" – and what does it have to do with the Helmholtzian "sensation of tone", on which it seems to depend? And, if the "sensation of unison" is brought about by a logic that is "one's own" when the physical and mental of which is made into an expression of sound, what is this "logic", and, insofar as it is related to a "logic of ideas", what does it have to do with the Ornettian Idea we have already encountered? And, then, what does unison have to do with the

362 Coleman, "Prime Time for Harmolodics".
363 Fuller, *Prime Design.*
364 Helmholtz, *On the Sensations of Tone*, 7.
365 "Prime Time", 54.
366 "Prime Time", 54.
367 "Prime Time", 54.

voice, with a voice that is one's own? In what sense, in other words, is the "sensation of unison" the sensation of *the sound of one's own voice*?

In April 1972, together with the conductor, David Measham, and the London Symphony Orchestra, Ornette recorded *Skies of America*, a piece originally written for orchestra and the members of his own group. However, due to union restrictions regarding the employment of foreign musicians, only Ornette and the London Symphony Orchestra would appear on this recording, together with an unknown drummer, a situation Ornette would later describe in terms of a law regarding the mixing of classical music and jazz:

> ...when I was in London, I couldn't use Prime Time because it was against the law to mix classical music and jazz. They wouldn't let me do it. That's how I wrote it. So all I did was record the unison themes.[368]

"All I did", says Ornette of his difficult time with the London Symphony Orchestra, "is record the unison themes", themes characterised by the particular form of relation to which Ornette refers in his essay on harmolodic theory, and which he calls "unison" – a relation of *one-sound*, of a sound that is "one", "the same".

Hamiltonian unison

In terms of Hamiltonian analysis, a musical unison is, of course, a zero vector – the difference produced when some pitch is analysed with respect to itself (and sometimes also when this difference is *12*, or some multiple of *12*, so as to produce, as a consequence of octave equivalence, "octave unisons", "double-octave unisons", and so on). Insofar as musical unisons also imply temporal coincidence – temporal "unison" – two points are "in unison", when the analysis of the temporal position of one point with respect to another point also produces a zero relation. In terms of a relation more broadly, such a "unison" implies a simple form of equivalence – a relation that is reflexive (it relates a point to itself), symmetrical (if it relates *x* to *y*, it also relates *y* to *x*) and transitive (if it relates *x* to *y*, and *y* to *z*, then it also relates *x* to *z.* See page 49). However, if we look at our transcription of the opening of *Skies of America* (*fig. 9.1*) whilst the melodies appear in *temporal* unison – in a form of "homophonic" coincidence – they precisely do *not* appear in unison in terms of pitch, rather constituting a searing harmonic *disunison*, as distinct pitches form rich, discordant chords. Not counting octave repetitions, the first harmonic simultaneity contains five distinct pitch classes – G, F, Db, C, Ab, Bb (marked *x* in *fig. 9.1*).

368 Coleman, interview by Katz.

Skies of America – opening theme

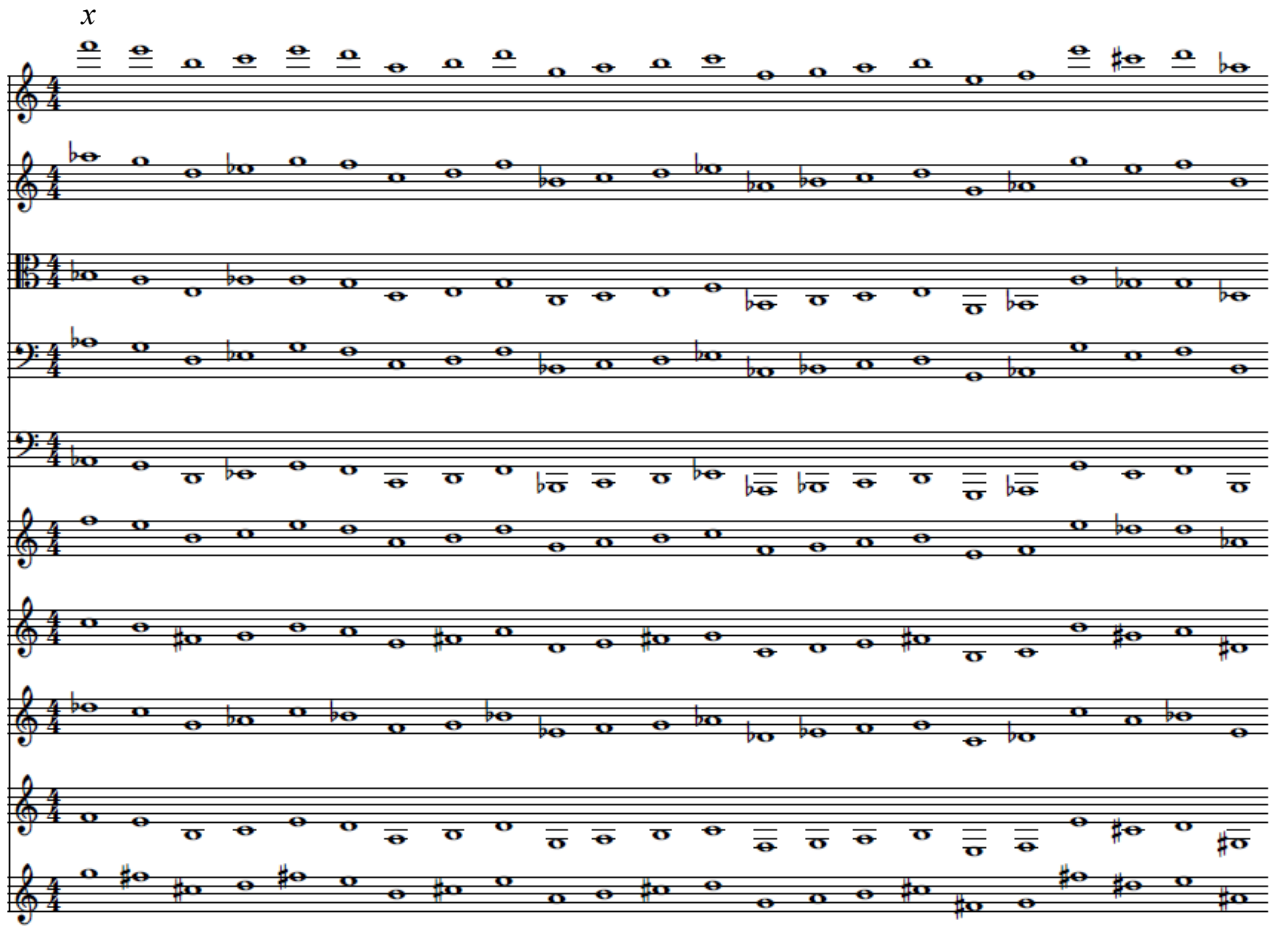


Fig. 9.1

So, if the identity, the being one, the same, at the level of the "sound" that pertains to this theme is not to be situated at the level of the pitches that constitute them, such that the relation between them would be *d*(0), at what level is it to be situated? In what sense is there a "sound" that pertains to this theme that can be characterised as "one", as the same, equivalent, as an identity? In what sense, in other words, is this theme a "unison theme"?

In an attempt to address these questions regarding "unison", this singularly Ornettian signifier, questions that also have to do with sensation, with logic and with voice, we will turn to some of the many contexts in which this signifier has appeared, moments in Ornette's discourse that may help us to shed light on this enigmatic term, so important in the Ornettian universe, and its relation, perhaps, to other, more conventional uses of the term. We will begin, however, with something Ornette has said regarding tuning, something that bears directly on the relation to Helmholtz and the notion of "unison" his work implies.

2. Sharp or flat in tune

In his famous text, Helmholtz had sought to connect the boundaries of two sciences that, although drawn together, he said, by many natural affinities, had hitherto remained distinct – the boundaries

of physical and physiological acoustics, on the one hand, and of musical science and aesthetics, on the other.[369] For it was, he thought, precisely to the theory of the sensation of hearing, with its source in the phenomena of acoustics – the vibratory motions of elastic bodies and their laws, whether the motion of external objects or of the ear – that music was to look for the foundation of its structure.[370] The regular motions that produce musical tones had been exactly investigated by physicists, said Helmholtz. They are oscillations, vibrations or swings – up or down, or to a fro motions – of the sonorous body, and it is necessary that they should be regularly *periodic* – that, in other words, they should be a motion that "constantly returns to the same condition *after exactly equal intervals of time*".[371] The length of these equal intervals (*a* and *b* in *fig. 9.2*) between one state of motion and its next exact repetition are to be called the length of the oscillation, vibration or swing, or the *period* of the motion.[372]

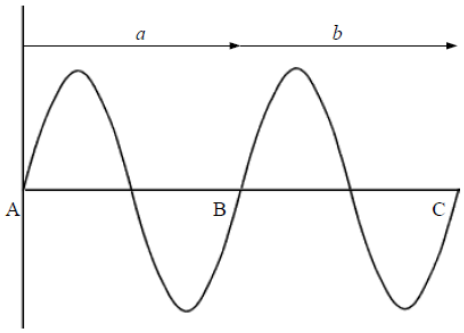


fig. 9.2

However, Ornette has described a realisation that bears directly on this relation between frequency and musical tone to which Helmholtz refers, a realisation, he says, that came very early in his development on the saxophone, and which calls into question the notion that a relation, such as the one Helmholtz describes, would need to be "exact":

> I realised you could play sharp or flat in tune. That came very early in my saxophone interest. I used to play one note all day and see how many different sounds I could get out of the mouthpiece. (I'm still looking for the magic mouthpiece)…I'd hear so many different tones and sounds.[373]

Tuning neighbourhoods

Let us characterise this realisation – the realisation that you can "play sharp or flat in tune" – in terms of what might be called a "tuning neighbourhood". If, in a wider set of frequencies, *F*, there is a neighbourhood of frequencies, U_x, experienced as realising a given pitch, *p*, with *a* and *b* as its boundary points, there is a subset of frequencies of U_x - U_{xi} – experienced as "in tune"; all frequencies contained in U_{xi} , in other words, are experienced as "in tune" realisations of a chosen

369 Helmholtz, *On the Sensations of Tone*, 1.
370 *Sensations of Tone*, 4.
371 *Sensations of Tone*, 8.
372 *Sensations of Tone*, 8.
373 Litweiler, *Harmolodic Life*, 25

pitch, *p.* The complement of U_{xi} in U_x is thus all those frequencies experienced as successful realisations of the chosen pitch, albeit "out of tune", and the complement of U_x in the wider frequency space, *F*, is all those frequencies *not* experienced as realisations of the chosen pitch, *p*. These neighbourhoods are shown in *fig. 9.3.*

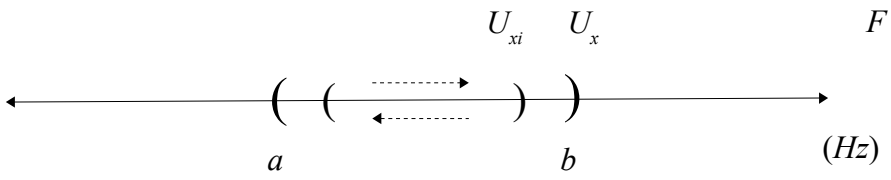


Fig. 9.3

We can thus play "sharp and flat in tune", as Ornette suggests, insofar as the in-tune neighbourhood, U_{xi}, contains more than one point; we play "sharp in tune" by moving to the upper frequencies contained in that neighbourhood, and "flat in tune" by moving towards the lower frequencies of that neighbourhood (as shown by the discontinuous arrows moving to the right and left in U_{xi}), with no implication of a central point constituting the "proper" tuning for that particular pitch.

However, if it is possible to play "sharp and flat in tune", as Ornette realised early in his interest in the saxophone, if it is possible to play "*one note* all day" with sharp and flat tunings, this implies that the identity of the musical tone, of a musical pitch, is *not* contingent on an identity at the level of the oscillations of a sonorous body, not contingent on the rate of those oscillations being "exactly the same", as Helmholtz suggests; rather, in other words, more than one frequency can be experienced as the "same note". Correlative to this, if unison implies identity at the level of pitch – that two pitches are the *same pitch* – to be expressed, perhaps, as a zero vector, Ornette's experiments with tuning reveal that this does not necessarily imply identity at the level of those frequencies experienced as realising those pitches. "Sharp and flat in tune", in other words, implies precisely that an effect of unison at the level of pitch does *not* rely on a "unison" at the level of frequencies that manifest those pitches; identity can appear in the midst of difference, unison in the midst of disunison, and vice versa.

Transference of a pitch name

So, if an effect of "one note" can be produced by frequencies that are other than one, if different frequencies can, in other words, produce an effect of unison, of a "one" at the level of the note these frequencies manifest, what do such frequencies have in common such that they share a unison name, what do they have in common, in other words, such that they "are" both, for instance, "C"? The answer implied by our notion of a "tuning neighbourhood" is that what two frequencies have in common so as to share a name, such as "C", *is their relation to that same tuning neighbourhood*; both f^1 and f^2 can share the name, "C", insofar as they are experienced as being *contained in*, as "interior points"[374] of, the tuning neighbourhood experienced as manifesting that pitch. The

374 See page 52 of this thesis.

"common quality" apparently absent from their immanent properties is to be found instead on the side of their *relations*, on their being, that is, with respect to the boundary points, *a* and *b*, such that f^1 and f^2 are both greater than *a* and less than *b*.

3. The notation of unison

Let us now turn to an instance in which Ornette refers directly to the notion of "unison", an instance that has to do not with frequency and pitch, but with what Ornette has elsewhere called an Idea. "If C and E is a major third", asks Ornette in his interview with Andy Hamilton for the *Wire* magazine, "and D and F is a minor third, which one is highest?" "C and E is the biggest interval", Hamilton answers tentatively, "but F is the highest note..." "So you think the D is higher than the C and the E?", Ornette asks, before describing a notion of "sound" situated at the level of what Ornette has called an Idea, something that has to do with what he calls the "notation of unison":

> So you think the D is higher than the C and the E? Only by name, not by sound. The reason why you say D and F [are higher] is that you're looking at F as being the 4th of C, but it's the minor 3rd of D. It's a minor 3rd, it's not a 4th. It has nothing to do with theory, it just has something to do with the notation of unison. There are lots of things in music like that.[375]

Higher by name

If the letter-names, C, E, D and F form part of the alphabetically-ordered set of musical letter-names, (A, B, C, D, E, F, G), then D and F are "higher", insofar as C < D and E < F at the level of the order that pertains to the set. We could represent this by means of vectors in a space of letter names ordered alphabetically, as shown in *fig. 9.4*, in which the vector relating F to D appears "higher" in the space than the vector relating E to C; the D and F are higher than the C and E, as Ornette says, "by name".

375 Coleman, "A Question of Scale", 24.

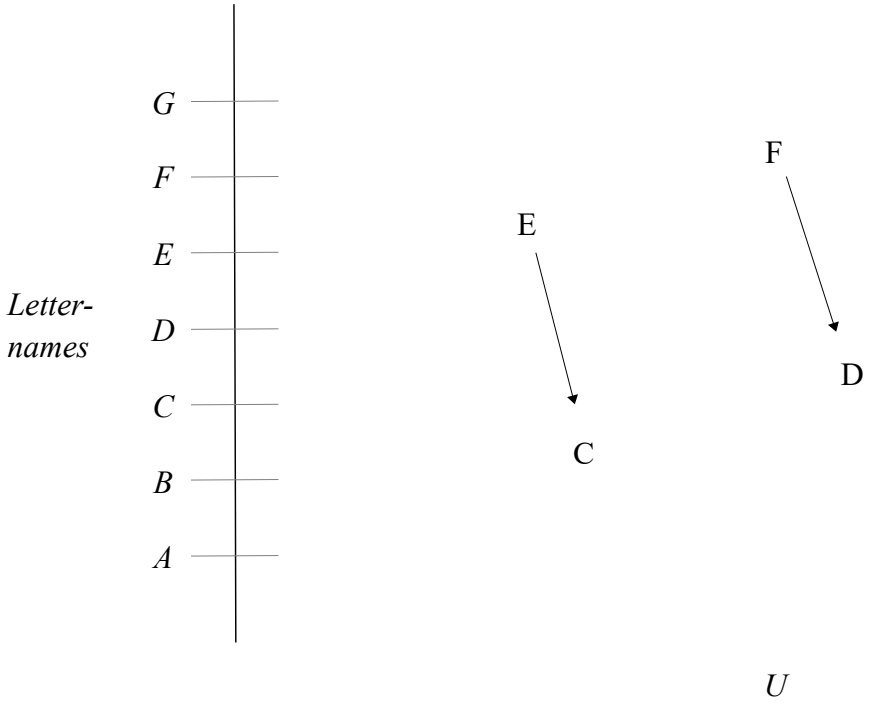


fig. 9.4

Higher by sound

However, there is another order that pertains to the Ornettian Ideas these pitches "carry" – ma3rd, mi3rd, and so on – that is not the order that pertains to the letter names. Ideas form their own order, which, of course, is simply the order that pertains to the numerical values used to represent them. In this order, ma 3rd follows mi 3rd, and so on, which can represented as vectors in a space of numerically-ordered Ornettian Ideas (expressed in *fig. 9.5* as semitones). Now (E, C) is "higher than" (F, D) "by sound" – by Ornettian Idea-sound.

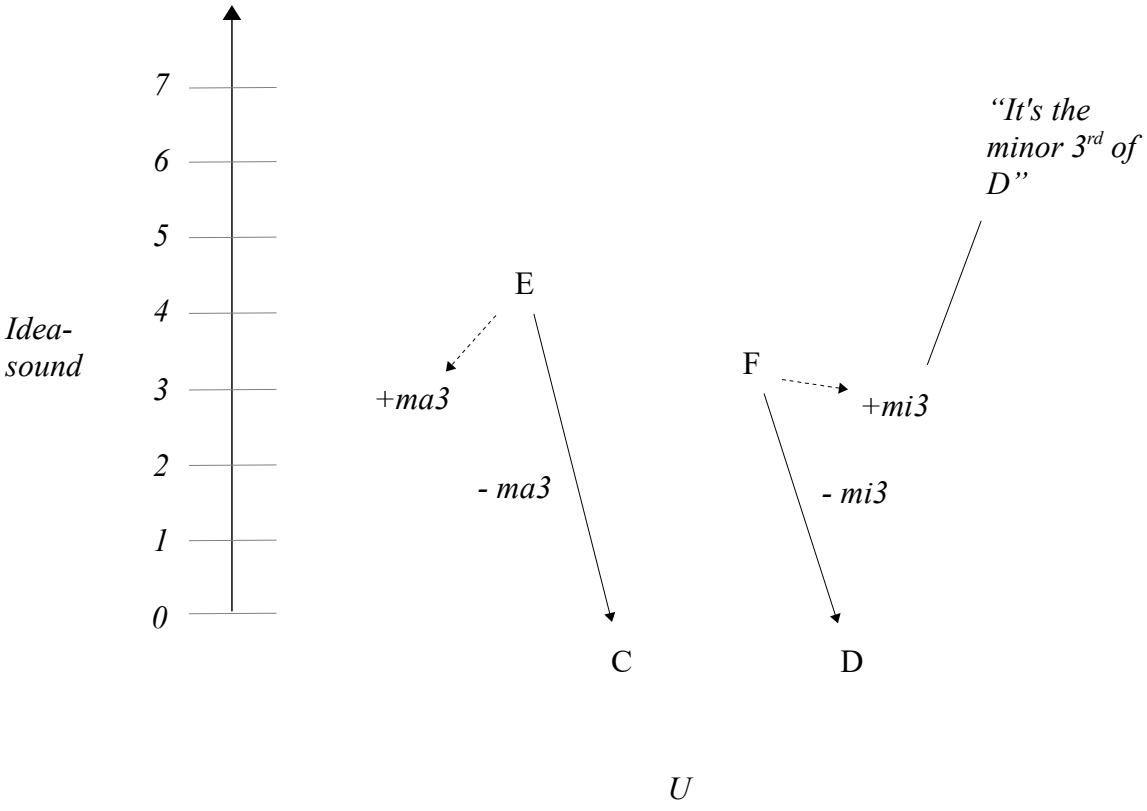


fig. 9.5

Conceiving the top line of the score to *Skies of America* as the manifestation of a tonic-oriented space, with C as tonic, for instance, this produces "4", "3", "7" and "1" as the Idea-sounds produced by the tonic relation this space implies, carried by the notes, F, E, B, C. If, correlative to the parallel transference of the intervallic relations internal to the melody, we then transfer the tonic relation in parallel to the second line of the score, this, of course, produces the same four Idea-sounds, as carried by Ab, G, D, Eb, and so on. Now the melodies are in "unison", insofar as the "son" that pertains to uni*son*, is the "son" of Idea-sound (*fig.9.6*).

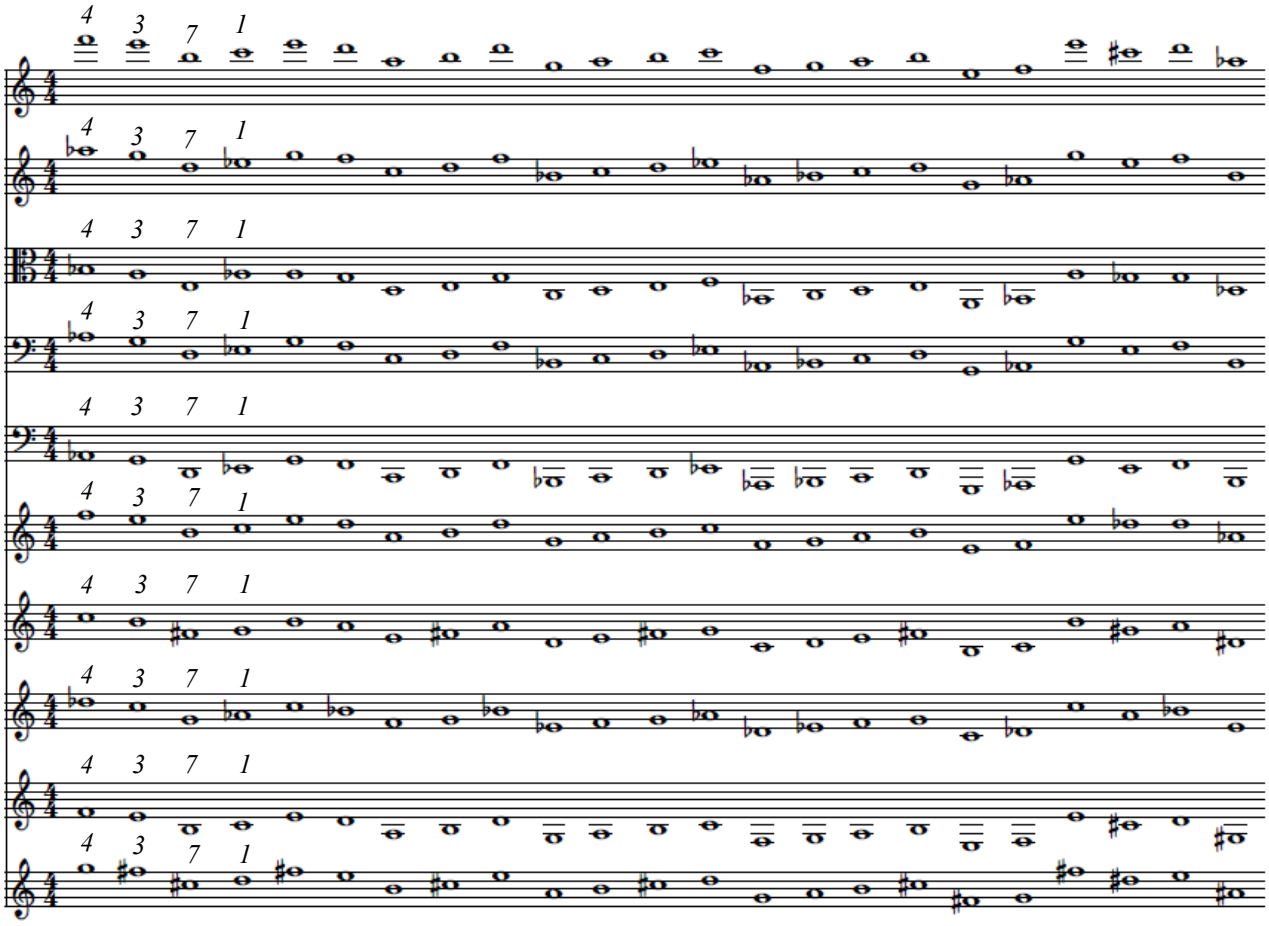
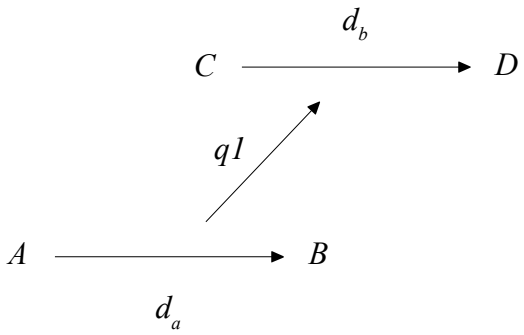


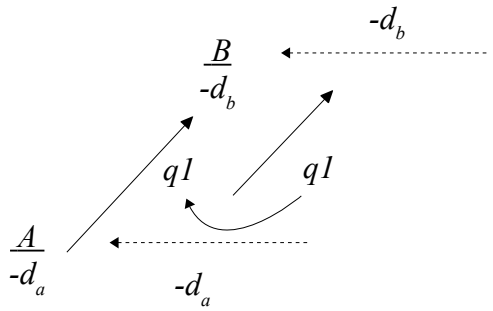
fig.9.6

Transference of an Idea name

If “unison” here implies the unison of Ideas – that two distinct pitches carry the same Idea – and if the Idea is conceived in terms of something of the relation transferred to the point, as we proposed in chapter VII, then a unison at the level of the Idea necessarily implies a unison at the level of the relation, that two points A and C, are related to two other points, C and D respectively, by means of the same relation. In chapter VI, we conceived of such a “unison of relations” in terms of quotient *1*, which relates two vectors with the same “distance” and “direction”:



With the Ornettian Idea as the being of the inverse form of the relation transferred to the point, as we proposed in chapter VII, the transfer of $-d_a$ to A and $-d_b$ to B will then entail the correlative transfer of the relation, *q1*, relating these relations, such that *q1* now appears as a relation relating the relations in their new form as Ornettian Ideas:



As with the frequencies "sharp and flat in tune", what two pitches, *p*' and *p*", have in common such that they share a Idea-name – for instance, "6th"– is thus, again, a *relation* – here their relation to a point of tonic orientation, their being "a sixth up" from the pitch, *p*"', coordinated to the origin coordinate – a relation which is then transferred to the point as an Idea the point carries "in it".

4. A different unison for the same notes

In an interview with Bill Shoemaker for *Jazz Times* magazine, and echoing earlier statements he had made in the original sleeve notes to *Skies of* America, Ornette has also suggested that the harmolodic notion of unison has something to do with the system of clefs, and, in particular, with the transferences produced by shifts at the level of clef relations. In this interview, he starts by referring to the notational marks that appear on the second space, the third line, the fourth line and the fourth space of a stave, read as the letter-names, A, B, D and E, in the treble clef. (At points in the foregoing discussion, we will refer to the stave lines and spaces as numbered in ascending order, with the bottom line as 0, the first space as 1, the second line as 2, and so on, such that A, B, D and E appear as 3, 4, 6 and 7):

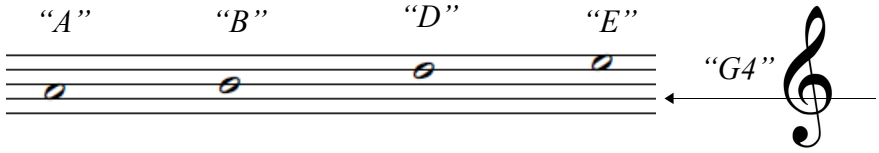
> In the treble clef, when you play A, B, D, and E, that A is C, the B is a C for alto, the D a C for the tenor, and the E is the C for the soprano. So, it's not really four different notes, it's the same four notes. So, therefore it's deceiving to believe that the piano is the transposed clef for all voices. What it really does is uses those four words to make harmonies, keys, and chords. The treble clef does not have a pure voice.[376]

The same four notes

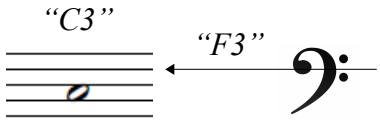
If A, B, D and E are not really four notes but "the same four notes", this implies that the four notational marks to which the signifier-letters – "A", "B", "D" and "E" – are to be transferred as

376 Coleman, interview by Shoemaker.

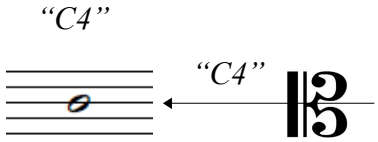
a consequence of a treble clef relation –



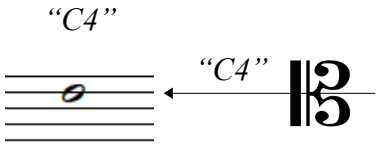
– are in fact to be related to four distinct clefs – bass, alto, tenor and soprano – so as to transfer the letter-signifier "C" to each of them. In Ornette's terms, "it's not really four different notes; it's the same four notes";



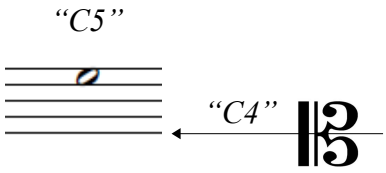
bass



alto



tenor



soprano

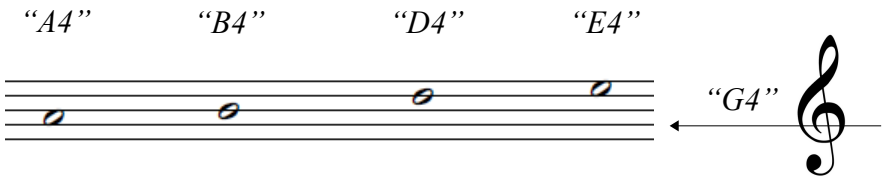
A different unison for the same notes

However, if we are to read apparent difference as identity – four different notes as "the same four notes" – this is because such an apparent difference is already the effect, the outcome, of an inverse, "transpositional" movement that goes not from difference to identity, but identity to difference, from the same note to (the appearance of) four different notes. "In harmolodics", says Ornette,

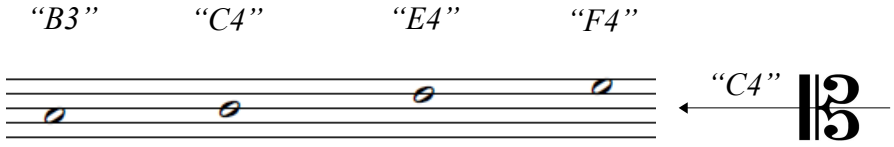
"those four voices are transposed into one voice", producing "a different unison for the same notes":

> If I asked you to play soprano G natural on the piano, that's C natural for the treble clef. C natural for the soprano would be E. You can't hear those as voices, so you call them chords and keys. In harmolodics, those four voices are transposed into one voice. For instance, the A, B, D and E would be B, C, E and F on the alto clef, and G, A, C and D on the tenor clef. The same notes. So you have a different unison for the same notes.[377]

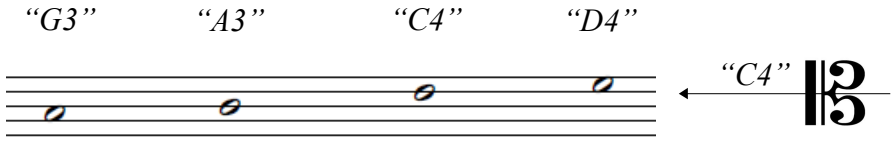
The "same four notes" transposed into the treble clef would appear as A, B, D and E:



– the "same four notes" transposed into the alto clef would appear as B, C, E and F:



– the "same four notes" transposed into the tenor clef would appear as G, A, C and D:



- and so on, yielding "a different unison for the same notes". In this sense, what appears as A, B, D and E is not really four notes, but "the same four notes", "C", for bass, alto, tenor and soprano clefs, when the four notational marks, 3, 4, 6 and 7, representing "C" for each of these clefs, are "transposed into one voice",when they are read as marks internal to a single clef – the treble clef. Now "the same notes" (for four different clefs) appears as "four different notes" (for the same clef). Although Ornette does not refer to *Skies of America* in his interview with Shoemaker, looking at the top line of our transcription of the opening theme to *Skies of America*, we see that the "different unisons" Ornette describes, produced as they are by these shifting clef relations, appear in a reduced

377 Coleman, interview by Shoemaker.

form at the beginning of the melody. The “unison” produced by an alto clef relation – “B”, “C”, “E”, “F” – appears first, in a reordered form, as “F”, “E”, “B”, “C”, marked as *U* in *fig.9.7*. *U* is followed by *V*, the treble clef “unison” – “A”, “B”, “D”, “E” – appearing reordered as “E”, “D”, “A”, “B”, which is then followed by *W*, the “D”, “A” and “G” of the tenor “unison”.

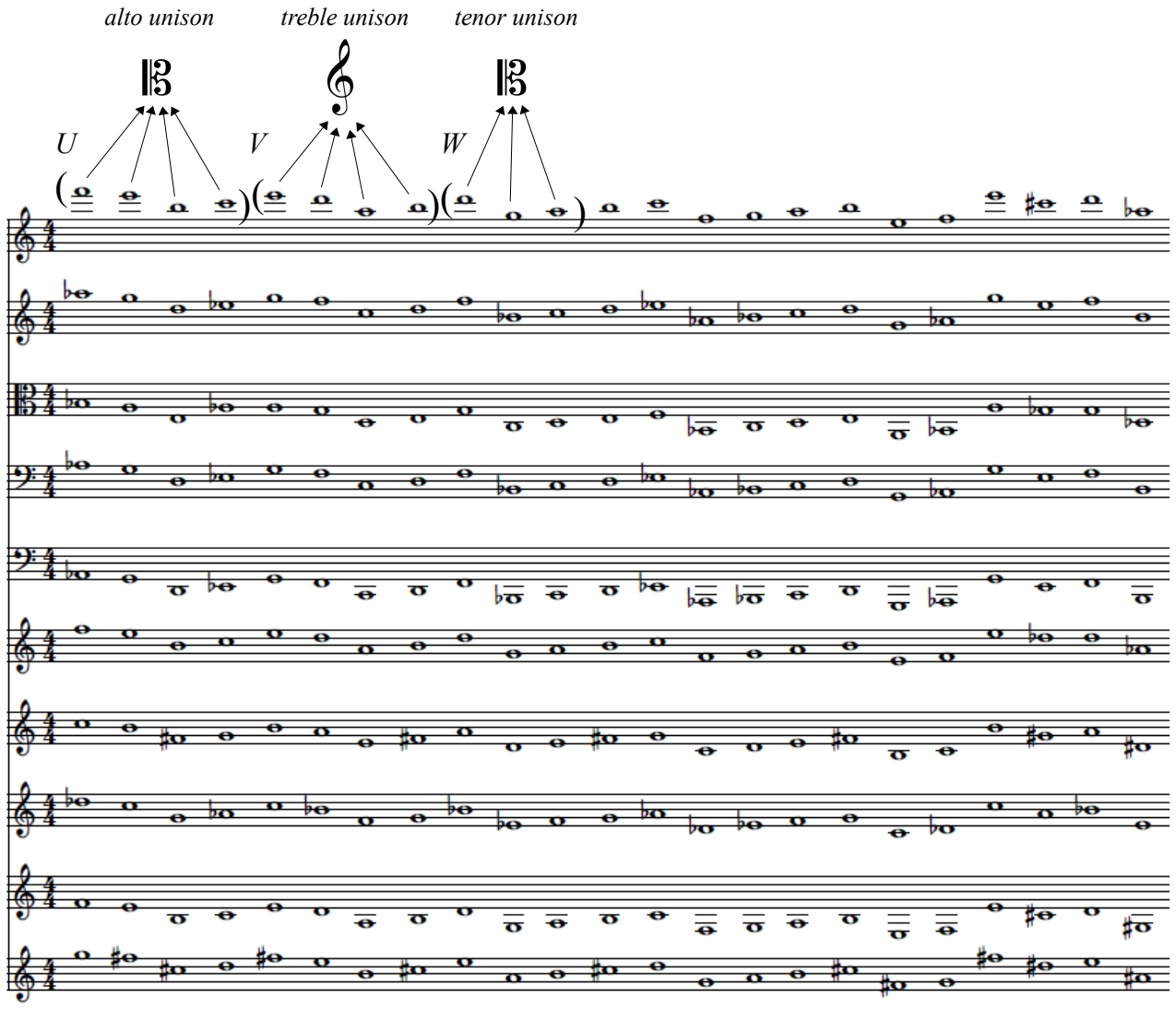
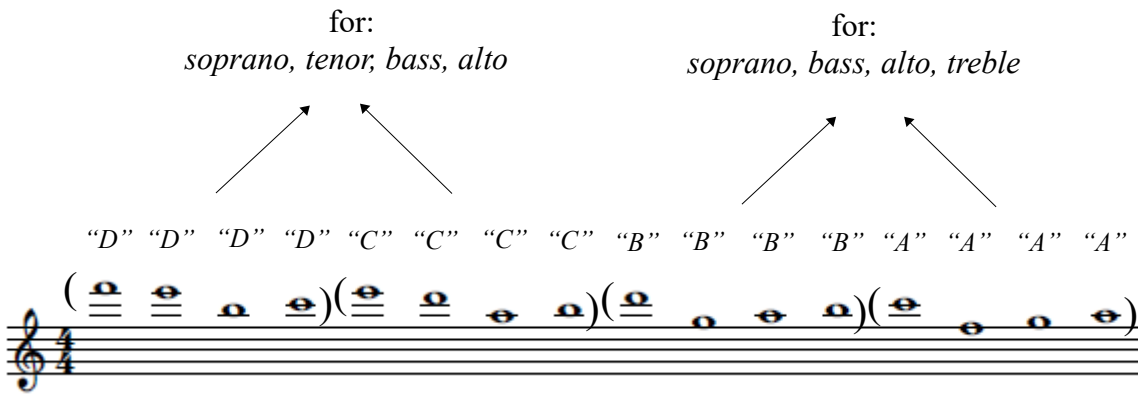
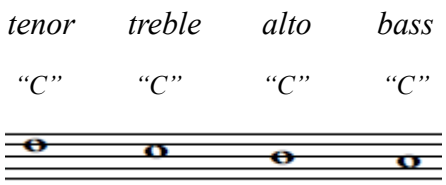


Fig.9.7

With these “unisons” not as “four different notes” but “the same four notes”, the first four notes of the *Skies of America* theme are now “the same four notes”, “D”, the second four notes, as Ornette describes, are “the same four notes”, “C”, pitches 9 – 12, if we introduce a treble and soprano clef relation together, are now “the same four notes”, “B”, for the soprano, bass, alto and tenor clefs, and pitches 13 – 16 are all “the same four notes”, “A” for these same clefs.



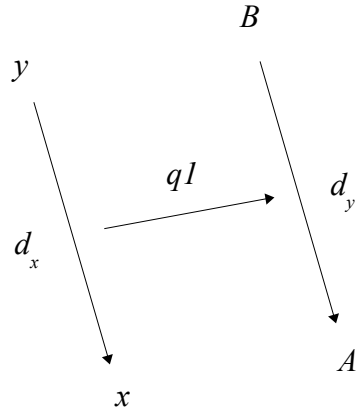
Writing these notes – "D", "C", "B", "A" – on a treble stave, they then appear as "the same four notes", "C", for the tenor, treble, alto and bass clefs.



However, if these notes are "not really four different notes" but "the same four notes", sharing the letter-name, "C", what, if anything, do they have in common, such as to allow the "transference of a name", "C", from one to the other? What is the "quality in common" linking one to the other, so as to produce identity in the midst of apparent difference, the "same note" appearing as "four different notes"?

Transference of a letter name

The relation between the letter-names of the musical alphabet is, in the sense we elaborated in chapter VI, "free"; the letter name can, in a sense, "go" anywhere, but as soon as a single letter name is transferred from the orienting point of the clef to the line of the stave, the other letter names must be transferred in "parallel", so as to retain, that is, the relative proximities that pertain to the "musical alphabet". Conceiving "vectors" in stave and letter space, where a vectoral value indicates unit "steps" "up" or "down", or "forward" or "back" in the order that pertains to these spaces, we could give this "parallelism" in terms of quotient values thus. Given the (vectoral) relation, d_x, between any two points, *x* and *y*, of stave vector space, and the vectoral relation, d_y, between any two points, A and B, of letter space to which *x* and *y* are mapped, the relation between d_x and d_y will be quotient *1*; d_x and d_y, in other words, will be the "same vector", and thus, in the terms we developed in chapter VI, "parallel".



Thus, for instance, with the vectoral relation between the second space on the stave (3) and the third space on the stave (5) as *+2*, the vectoral relation between the two letter names to which 3 and 5 are mapped will also be *+2.* If 3 is mapped to "C", for instance, then 5 will be mapped to "E", the letter *+2* – two steps up in letter space – from "C", and so on, such that the quotient relation between stave space vectors and letter-space vectors is always *q*1. In this sense, what all stave points have in common such that they share the name, C, *is this relation to all other points of the space*. All "C's" have in common, in other words, their being one step up (or some octave equivalent) with respect to the stave point mapped to "B", their being three steps down (or some octave equivalent) with respect to all points mapped to "F", and so on.

5. The harmolodic clef – 8

At a lecture-demonstration given at Harvard in 1980 together with three other renowned Ornette collaborators, Charlie Haden, Dewey Redman, and Billy Higgins, Don Cherry described something in which some of the ideas we have been discussing come together, something he called the "harmolodic clef", a clef of Ornette's own devising, written as a figure 8 – a sign with echoes, perhaps, of infinity.[378] "When Ornette writes a clef", says Cherry:

> ...he writes the treble clef, and then he writes the harmolodic clef, which is a figure 8, and then you have the bass clef. So that means that you could play...look at the lines and spaces of the music and no matter what transposed instrument you play the melody [...] it will still come out the melody, and it will still be in harmony with the instrument you're transposing from.[379]

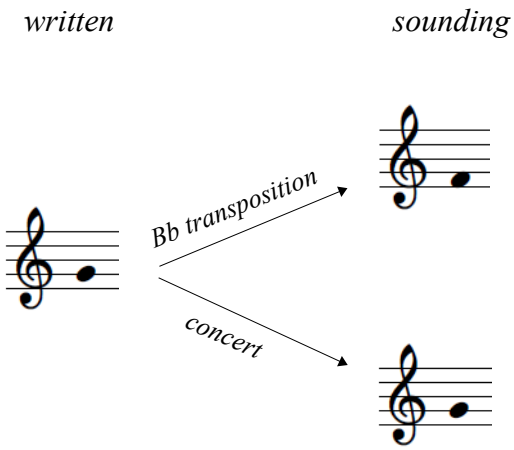
Harmolodic reading

To read from the harmolodic clef thus means a number of different things. First, the musician looking at the lines and spaces introduces these lines and spaces into a relation with a clef, such that

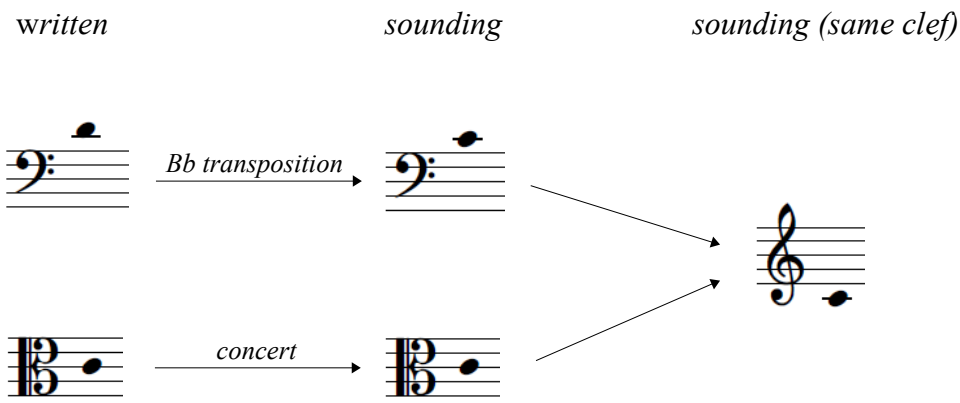
378 Or of the bow-tie Ornette's "main hero", Buckminster Fuller, introduced in *Nine Chains to the Moon* to represent "teleology"...the process of OBSERVING consciously, or absorbing subconsciously, from the OUTSIDE INWARD so that one may do from the inside outward". Fuller, *Nine Chains To The Moon*, 44.

379 Cherry, "Old and New Dreams Harvard Lecture-demonstration", part 4, 1:26 – 1:48.

the alphabetical octave-letter names are transferred to these lines and spaces. Second, these octave-letter names are introduced into a relation to sounding pitch, insofar as the keys or strings or valves on a particular instrument are themselves mapped to the set of letter names. These two aspects of harmolodic reading produce a number of possible permutations, depending on whether different musicians are reading from the same clef, on the one hand, and whether they play an instrument with the same "transposition", on the other. Two instruments reading from the same clef may, of course, produce different sounding pitches as a consequence of this reading, if they play instruments with a different transposition:



And, inversely, two instruments reading from different clefs may produce the same sounding pitch as a consequence of different transposition:



Harmolodic reading produces 1) "parallel" relations in alphabetical letter space, as a consequence of the clef relation, and 2) "parallel" relations in a space of sounding pitch, as a consequence of the specific ways that these alphabetical letter names are mapped to sounding pitches for instruments with different "transpositions". It was beyond the skills of this transcriber to identify all of the

different instruments in the orchestral texture playing the "unison theme" for the opening to *Skies of America*, but it is possible to see that transposing instruments reading from the same score without compensatory transposition will produce (at least some) of the parallel movement heard.

It doesn't change the sound you're making

Where instruments with different transpositions read from the same clef, these parallelisms will be exact – the intervallic relations between pitches that constitute the melody will be exactly the same – but where instruments read from a different clef, they may not be. This is simply a consequence of the "unevenness" that pertains to the sounding pitches that correspond to the "musical alphabet"; a "step" in alphabetical letter space, in other words, may be either a half or whole step in pitch space (or even larger where accidentals are concerned). For instance, notational marks on the second space and third line will form an ascending tone in the treble clef and an ascending semitone in the alto clef. *Fig.9.8* shows sounding pitch vectors correlative to the shifting clef relations on page 172.

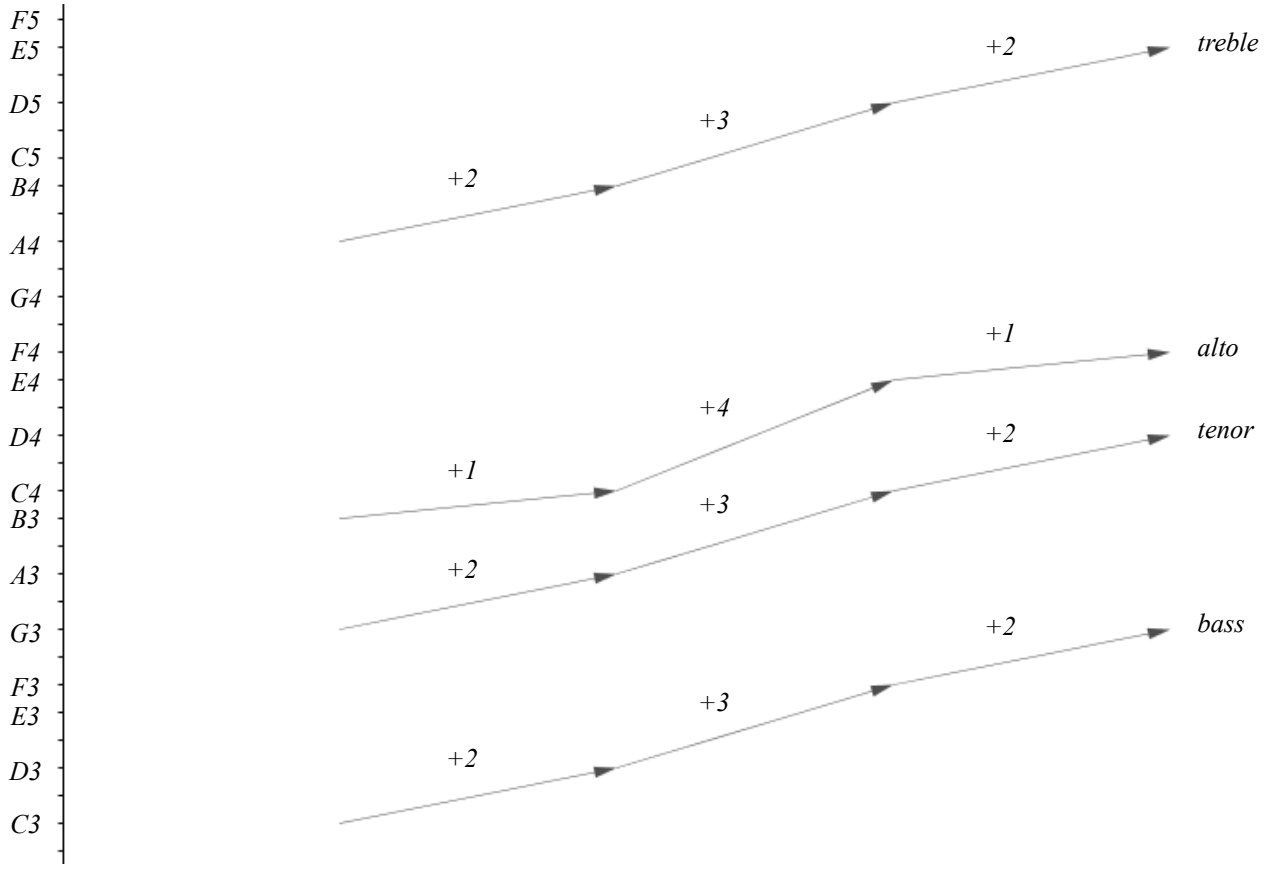
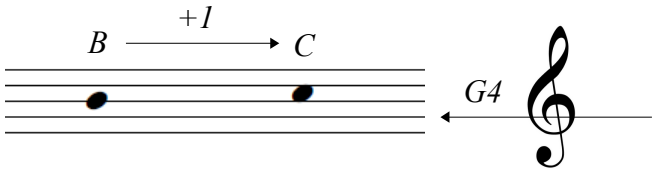


Fig. 9.8

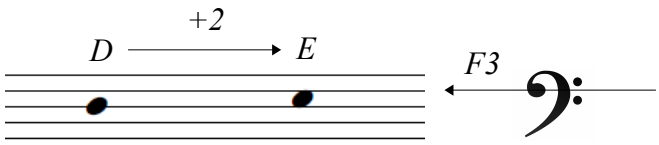
However, in an interview for the Guardian, Ornette suggested that such "unevenness" at the level of intervallic differences does not necessarily produce difference at the level of what he calls "sound". Two such intervals, in other words, can have the *same sound* – he gives the example of the marks, B and C, in the treble clef, as written on the third line and third space:

> B and C is a half-step right? But in the bass clef it's a whole step. That's crazy […] and it doesn't change the sound you're making.[380]

"B and C is a half step" (in the treble clef):



"But in the bass clef it's a whole step":



"...and it doesn't change the sound you're making".

However, if the shift from half-step between B and C in the treble clef to the whole step between D and E in the bass clef "doesn't change the sound you're making", if the points, B and C, have the same, unchanging "sound" as the entirely distinct points, D and E, to what does this signifier, "sound", refer? What is this one, unchanging "sound" if not the sound of the points, the pitches, that are changing, not one, not the same?

Transference of a sound name

Let us call this "sound" that both (B, C) and (D, E) share, "sound X"; what (B, C) and (D, E) share, such that the signifier, "sound X", can be transferred from one to the other, is the "step" they manifest. "Sound X" is the name of an intervallic step-sound, the sound of a step in pitch space, which does not change, even when the points that manifest this step change, and even when the step manifest in pitch space is *+1* rather than *+2*, or *+2* rather than *+1*. And, in fact, such a notion of "sound" was already implied by Ornette's allusion to the sound of Ideas, distinct from the pitches that carry those Ideas. If C-E is "higher" than D-E "by sound", it is because sound is to be conceived at the level of the Ideas these pitches carry, which make of both C and D tonics – pitches that carry tonic Ideas, and that are in Unison at the level of their Idea-sound.

380 Coleman, interview by Purcell, "Free Radical".

6. Unison

What, then, do these coordinates we have discussed – “sharp or flat in tune”, “the notation of unison”, “a different unison for the same notes”, the “harmolodic clef” – imply about the Ornettian notion of Unison? If “unison” is the mark of a relation between *sounds*, a mark of their being *one*, the same, an identity, as implied by the Hamiltonian equivalence, $d(0)$, which relates two pitches “in unison” one with respect to the other, what notion of Unison is implied here, to what relation relating what “sounds”, such that they are experienced as being “one”, as an identity, as the same, does Unison refer? What is Unison in Ornette's sense?

One-sound

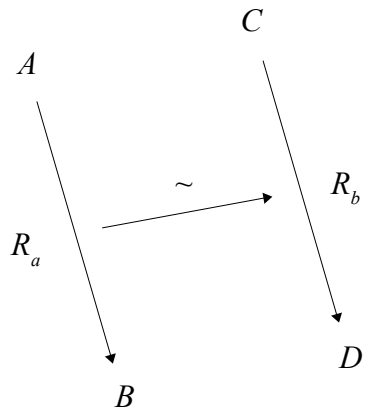
The first thing to note is that the fragments from Ornette's discourse we have discussed imply a distinction between three different forms of *sound*, to which we could give the names *point-sound*, *relation-sound*, and *Idea-sound*, to denote an experience of sound at the level of the *point*, as with the sound of a frequency, or of a pitch; an experience of sound at the level of the *relation*, as implied by the shift from C – B to E – D that “doesn't change the sound you're making”; and an experience of sound at the level of the Ornettian *Idea*, as implied by the E that is “higher than” F “by sound”, insofar as this “sound” is the sound of the Ideas E and F, as Ornettian Intervals, “carry”. Each of these notions of “sound” implies a distinct form of *unison*, of *one-sound*: 1) *one-point-sound* – as with the frequencies that are the same frequencies, or two pitches that are the same pitch 2) *one-relation-sound* – as with the relation that doesn't change in the shift from B – C to D – E, or the relation that stays the same in spite of their different notational manifestation as 3 or 4 in stave space, and 3) *one-Idea-sound* – as with the “notation of unison”, where unison implies that two pitches both carry, for instance, a tonic Idea.

From one-point-sound to one-relation-sound

In each of these fragments from Ornette's discourse, it is also possible to discern the shift, which we uncovered in the chapter on transposition and effect of invisibility, from points to relations, from an experience of identity, of equivalence, of being “one”, the same, at the level of points, to an equivalence, an identity, being “one”, at the level of the relations these points manifest, albeit, at times, in its “disavowed” form as the Ornettian Idea. In the case of “sharp or flat in tune”, there is a shift from an experience of identity at the level of the frequencies – the assumption that an experience of identity at the level of the pitch must imply an identity at the level of the frequencies that manifest those pitches – to an identity at the level of the relations those frequencies manifest. What each frequency has in common such that they are experienced as being the same pitch, is their relation – their being “in" – with respect to the same “tuning neighbourhood”. In the case of the “notation of unison”, there is a shift from an experience of identity at the level of pitch to an identity at the level of the Ideas these pitches “carry” – which is to say, a shift to an identity at the level of a *relation* to an external, orienting point, which is then transferred to the point as an Idea it is experienced as carrying “in” it, as we discussed in chapter VII. And in the case of “a different unison for the same notes”, there is a shift from an experience of identity at the level of the notational marks, to an experience of identity at the level of the relations these marks manifest. Two

marks, 3 and 4, in other words, can both "be" "C", insofar as they have in common their relation to all other points of the space – their being, for instance, one step down from the mark mapped to "D", or one step up from the mark mapped to "B", and so on.

We can represent this equivalence, this being "one", the same, an identity, at the level of the relation in terms of a general equivalence, ~ , between relations, *R*, which simply states that the relation R_x and R_y as manifest by the points, A, B and C, D respectively, are "the same relation", or that two Ideas – two disavowed forms of the relation – are "the same Idea".



If this is the case, if in each of these instances we have discovered a shift from an experience of identity, of being "one", the same, at the level of points, to an identity, a being "one", the same, at the level of the relations, and if both the points and the relations imply a different notion of *sound* – *point-sound*, *relation-sound* – then this would imply a shift at the level of the notion of *unison* itself – from a unison, an identity, an equivalence, a being "one sound", of points, to a Unison, a being "one sound", of relations. Now Unison – *U* – replaces the mark for equivalence as the "one" relating the sound that pertains to a relation, that says of this relation, as manifest by points A and B, and this relation manifest by the points C and D, that they have the same sound – that they are "one", the same, an identity at the level of relation-sound, a relational *Unison.* In this sense, the opening theme of *Skies of America* is a "Unison theme" in a har-mo-lodic sense; first, insofar as a Unison relation relates the interval-relations manifest "horizontally" by each melodic line, and, second, insofar as, internal to each melodic line, Unison relations relate the "vertical" relations manifest by each point of that melody, and, on account of which, each note of the melody is the "same note", "C". Thus, whilst the first, "horizontal" or "melodic" sense is correlative to transposition, internal to each manifestation of these interval relations, what appears as difference – "four different notes" – is, in fact, identity – "the same four notes" – insofar as identity is contingent not on the identity of points (which appear as the differences, the different notes that make up the melody), but on the identity at the level of the "vertical" relations they manifest.

7. One's own logic

So, if Ornettian Unison is to be situated on the side of the relation, as an equivalence, an identity of relations, what of the "logic" to which Ornette refers in "Prime Time for Harmolodics"? What of

the “logic” that is “one's own” and that, when made into an “expression of sound”, produces, brings about, as Ornette says, Unison as a “sensation”? What, in other words, is this logic that brings about a Unison that is not a unison of points but a Unison of relations?

It's own law

In fact, the notion of a “logic” does appear elsewhere in Ornette's discourse, in the context of a discussion of exactly the shifting relation between names and sounds we have discerned at the heart of harmolodic reading, but produced instead by a misunderstanding regarding the naming of notes on the alto saxophone. In possession of his first instrument – a Gold-plated Conn alto saxophone – but without a teacher, which he could not afford, and with only the aid of a book, Ornette set about teaching himself to play:

> "I remember thinking, as the book said, the first seven letters of the alphabet were the first seven letters of music, ABCDEFG." But the standard concert scale is CDEFGAB. "So I thought my C that I was playing on the saxophone was A, like that, right? Later on I found that it did exist thataway only because the E-flat alto, when you play C natural, it is [concert] A [transposed]. So I was right in one way and wrong in another - I mean, sound, I was right. Then I started analysing why it exists thataway, and to this very day I realize more and more that all things that are designed with a strict logic only apply against something: It is not the only way it's done. In other words, if you take an instrument and you happen to feel it a way you can express yourself, it becomes its own law".[381]

We could call the (mis)perception that the “C that I was playing on the saxophone was A” a first Ornettian “law”, a first instance of a singularly Ornettian “logic”, according to which the reader effects a harmolodic substitution, replacing “C” with “A”, transferring the letter-name, “A” to something to which the letter-name, “C”, has already been transferred. If such a transference implies the parallel transference of the rest of the space of letter names, it is possible to see that, in spite of the differences produced by means of Ornette's misunderstanding – the difference between “A” and “C” – such a misunderstanding will produce a Unison at the level of the intervallic relations, correlative to the Unisons produced by means of harmolodic reading. For instance, a melody written “A”, “B”, “D” and “E”, will sound as (Eb alto) “C”, “D”, “F” and “G”, as an effect of the logic of Ornette's misunderstanding, a misreading which nonetheless manifests an equivalent intervallic structure – *+1*, *+2*, *+1* – when expressed as vectors in letter space.

8. The sound of one's own voice

However, there is, of course, something else we have so far failed to address, something that surprised us on the pages of Ornette's defining text on “harmolodics”, that has to do with the voice, and its relation to Unison. Unison as “the sound of one's own voice”, as a sound irreducible to Helmholtzian “sensation of tone”, on the frequencies and combinations of frequencies of which it nonetheless seems to depend. What then does what we have discussed this far have to do with the Ornettian “sensation of unison”, with the sensation of the sound of one's own voice? In what sense

381 Litweiler, *A Harmolodic Life* , 25.

is Ornettian Unison *voice*, and what does this voice have to do with the sensation that pertains to tone, in Helmholtz's sense?

I would know it was you

During his interview with Ornette for his radio show on WBAI, Gunther Schuller turned the conversation to the question of tone, and, in particular, of Ornette's tone, related at it was to the difficulties many had in listening to Ornette's music.“One hears specific comments about your tone”, says Schuller, which a lot of people, he imagined, “associated with something other than what they're expecting to hear”.[382] In fact, Ornette had his own association to relay; “I was talking to a neurologist and a psychologist the other night”, he said, “and he was telling me that the tone I have with the the music that I play was very associated with...”[383] – at which point Ornette's association is cut short. “Oh, your tone”, interrupts Schuller, “your music is unthinkable without that tone, absolutely one thing”.[384] “When I think of hearing the notes you play, played with a different tone, I may say, I can't even imagine it”.[385] Ornette then relates this tone, this “one thing” without which his music would be unthinkable, to the voice:

“Just like the words that one speaks, regardless of if I was in – wherever I was, and I heard your voice, I would know it was you, you know. I would know that was you”.[386]

The voice, like the tone, as a mark of identity, of a voice that is *one's own*, regardless of changes in space or time, the voice of one, of what stands for the one that I am.

The magic mouthpiece

In fact, the question of tone, connected as it is, as Ornette suggests, to the voice, has already emerged in of our discussion of tuning, in the context of the possibility of playing “sharp or flat in tune”, “I realised you could play sharp or flat in tune”, Ornette says, immediately shifting to the question of tone:

> I used to play one note all day and see how many different sounds I could get out of the mouthpiece. (I'm still looking for the magic mouthpiece). I'd hear so many different tones and sounds.[387]

If there is a mouthpiece for which Ornette is still searching, however, it's “magic” is not to produce a fixed tone, an identity at the level of the specific constellation of frequencies constituting a “tone”, but to produce *difference*, a difference without assumed limit – “I used to play one note all day”, says Ornette, and “see *how many different sounds* I could get out of the mouthpiece”. Thus, in this conversation of tone, which Ornette links to the voice as a guarantor of knowledge regarding

382 Coleman, interview by Schuller: 10:33 – 10:49.
383 Interview by Schuller: 11:03 – 11:16.
384 Interview by Schuller: 11:16 – 11:21.
385 Interview by Schuller: 12:12 – 12:19.
386 Interview by Schuller: 12:21 – 12: 29.
387 Litweiler, *A Harmolodic Life*, 25.

identity – as what would make it possible to *know it was you* – there emerges the desire for difference we encountered in our discussion of (a cure for) solitude, a desire for a difference that is *free*, not the desire for a specific difference, a difference as point, but difference as relation, for difference itself, regardless of which points manifest that difference. But how could it be that an effect of identity – the fact of being you and no other – can be produced by difference, by a tone – a voice – constituted by means of a *free difference*, by a relation indifferent to the identity of points, supposing instead an identity at the level of the relation, of difference itself, of what relates two points as "different"?

Phantom centre sound

In an interview with Richard Williams, Ornette spoke of the accusation his music had suffered, from Bob Brookmeyer and others, one closely related to complaints regarding his tone, that he was playing "out of tune". In this interview, Ornette relates the question to tuning temperament, introducing the notion of a "non-tempered psyche".[388] However, in the midst of this allusion to the history of tuning systems, something else emerges, a kind of constant, a still point in the storm of intonational difference, something to which the complaints about his music had turned a deaf ear. What had been heard as dis-alignment, as being "out" with respect to some expected alignment, was, in fact, "my emotions raising my tone to another level". In the midst of shifts at the level of frequency and tone, "I could still hear", Ornette says, "the centre of what I was reading".[389] "I could still hear the centre of what I was reading", says Ornette, but if one can play "sharp or flat in tune", implying a tuning neighbourhood, as we have described, containing multiple frequencies all of which are experienced as "in tune" manifestations of the same pitch, where is this centre Ornette is hearing to be found? For "sharp or flat in tune", as articulated by our "tuning neighbourhood", implies that *there is no centre*, there is no frequency that "is" the pitch; each frequency in that neighbourhood is, precisely, *equivalent* at the level of their *relations*, their being contained within the in-tune neighbourhood, and thus as manifestations of that pitch.

In chapter VI, we discussed an effect of invisibility that conceals another "centre", a "tonal centre" that is "difficult to discover", which, like the "lost or hidden object", a hidden quality common to all objects that share a name, emerges as an effect of the shift from points to relations implied by both transposition and "Stewart's law" – the shift, that is, from an experience of identity at the level of points to an experience of identity at the level of the relations these points manifest. This shift, from points to relations, we said, was correlative to a shift from a "bound" to a *free* space, from a space the identity of which is conceived in terms of its points to a space conceived in terms of the identity of its free relations. Such a space is *free*, in other words, insofar as it's identity is *free of points*, with the experience of a concealed, "invisible" tonic end*point*, or of a "lost or hidden object-quality", emerging as a kind of phantom in the space of freedom, the consequence of a misperception regarding the condition of an experience of identity such a space implies. In this sense, the shift from points to relations, from the identity conceived in terms of points to identity conceived in terms of relations, is always in danger of producing an effect of loss or hiddenness, the effect that the shift from points to relations hides, veils, the point in terms of which the identity of the space is

388 Coleman, "Pipes of Joujouka", 23.
389 Coleman, "Pipes of Joujouka", 23.

properly to be conceived – the pitch that *is* the tonic, the frequency that *is* the pitch. If freedom implies *anywhere*, in other words, that the relation can "go" anywhere, be manifest by any points, so long as those points manifest that relation, the phantom centre implies a determinate *somewhere*, a determinate singular *one-where*, a singular, determinate point lost, made "invisible", by the shift from points to relations, binding to freedom, somewhere to anywhere.

The sound of one's own voice

In this sense, to our two notions of unison – the unison, the equivalence, the being one, of points, and the Unison, the equivalence, the being one, of relations – we could add a third form of unison, irreducible to either of them – the unison, the *one-sound* not of determinate points or of the relations they manifest, but the "sound" of a phantom "one" that emerges in the shift from one to the other, the sound, the *voice*, of a singular "one" that would *be* the identity that, with the shifts from points to relations, any determinate point, any determinate voice, can only manifest. What Ornette "still hears", the "centre" that persists in the midst of the space of *free relations* his experiments with tuning and tone imply, is thus a *phantom*, an "invisible", inaudible point-effect, that is neither the sound of the specific frequency-differences played, nor the sound of the relation to the same "tuning neighbourhood" that makes of these differences an equivalence, but the sound of the invisible, of the inaudible, of a phantom object "lost" in this shift from one to the other; the sound of a phantom one, *the sound of one's own voice.* And, if the different strands of the musical texture of *Skies of America* constitute the different manifestations of the same, free relations, the phantom sound such differences produce, the *one-sound* that haunts this space of freedom, of relations free of points, is a collective "one", a collective "unison", "the sound of one's own voice", insofar as the voice of one emerges as a sound irreducible to any one voice, irreducible to anything that is heard – the voice of an absent one that is the effect of a misperception regarding the nature of identity such a space of freedom implies.

However, as in our discussion of "something else" in relation to a cure for solitude, it is perhaps possible to draw an important distinction, between a difference that emerges as an *effect* of the search for a "lost or hidden object", for a determinate difference that would "be" the centre, would "be" the one veiled by transference, and a desire for difference that is the *cause* of that centre, that is the proliferation of differences that produce the centre as their effect. The search for a lost or hidden object and the desire for free difference thus imply two distinct approaches to the question of difference and the effect of "one" it produces. On the one hand, difference emerges "destructively", as the ear discards differences in its search for the lost or hidden "one" – the one, for instance, frequency that would "be" the pitch, or the one pitch that would "be" the tonic. On the other hand, difference is a mode of creation; one seeks difference itself, from which the centre-one emerges as a "by-product" – a distinction that is, in effect, the distinction between a desire for one that produces difference as its effect, and a desire for difference that produces an effect of one.

9. What does it mean to follow?

So, if to follow implies convergent movement, that "you" goes where "I" goes, as Ornette says to Charlie Haden sometime in the later 1950s, what does Ornettian Unison, with its distinction

between points, relation-Ideas, and the phantoms produced in the shift from one to the other, imply about what it means to follow? What does it mean to "go where I go", when "I" goes in a space of Unison relations?

With Unison as an equivalence between relations, regardless of the points that manifest this relation, to "go where I go" is, as in chapter VI on free relations, to go anywhere such that this going manifests this relation; one can play any frequency, so long as it manifests the relation of being "in" with respect to the tuning neighbourhood mapped to a single, unison pitch; one can play any pitch, so long as it manifests the same Idea (implying a unison of "disavowed" relations); one can read a set of notational marks in any clef and on any transposing instrument, so long as the letter names transferred to those points manifest the same relations. This shift from the unison of *points* to the Unison of *relations* implies that an effect of relational Unison can be produced by means of "punctual" *disunison* (disunion in terms of points) – that, in other words, a *following*, a "going where the other goes", can be produced by means of a *not-following*, by going – manifesting – somewhere other than where the other is going. Inversely, punctual "following", a punctual *unison*, a "going where the other goes" at the level of the point, does not necessarily imply a Unison at the level of the relations that point manifests. Punctual disunison can manifest a Unison, and relational disUnison can be manifest by means of punctual *unison*.

However, in this space of freedom, this shift from a space of points to a space of free relations, from a unison of points to a Unison of relations, another "unison" emerges, the sound of an "invisible", inaudible "one", that is neither the sound of any determinate point, nor of any relations those points manifest, but a phantom "sound" produced by the shift from one to the other. In this sense, Unison in disunison – the effect of relational Unison produced by punctual disunison – correlative to a following in not-following, a convergence in divergence, produces a point of phantom following, a point of phantom unison, of convergence, irreducible to the not-following of our punctual divergence, or to the following of our relational convergence – the sound, the voice, of a lost following, a lost convergence, a lost unison, the voice of a lost one.

Closing remarks

To this distinction between points, relations, and the phantoms produced by the shift from one to the other, there is one final thing to add, one final point of complication, that has to do with something stated by Julian Adderley in the article he wrote on Ornette's music and ideas for Downbeat in 1960, something that bears, in particular, on the question of clef relations and the Unisons they imply. Ornette, says Adderley in this article:

> ...has the unique idea that the alto voice should be thought of in the alto clef. Consequently, his E-flat alto C natural concert is really B-flat in the alto clef.[390]

It is not clear how Adderley produces Bb in the alto clef in the manner described, for, in order to produce a concert C-natural on the Eb alto saxophone, one must of course play the note, "A", for that instrument. "A" written in the treble clef (on, for instance, the second space up) then appears as

390 "Cannonball Looks at Ornette", 21.

“B” for the alto clef, not as “Bb”. In any case, what is significant for our discussion is the first half of this statement, that Ornette has the idea that “the alto voice should be thought of in the alto clef”. For, although Ornettian Unison implies a shift from points to free relations, that the relations that pertain to the identity of the point given the name, for instance, “C”, can go *anywhere*, so long as this going manifests these relations, this implies that, for the alto voice, these relations *cannot* go anywhere, that they must in fact be manifest by particular, determinate points – the points, that is, that pertain to the alto clef. This is, we admit, a perplexing reversal. For if everything we have discussed regarding Ornettian Unison implies *free relations* – a relation free of points, implying identities unbound from the identity of any particular points – why this sudden moment of unnecessary binding, why the sudden insistence that relations for a particular voice “go” a particular somewhere, that they are to be realised by these determinate points?

To conclude, we propose a simple, provisional hypothesis. If an experience of binding, with, perhaps, echoes of bondage, calls for freedom, for a shift that will free relations of their bondage to specific points, as we saw in our discussion of a cure for solitude, perhaps such a sensitivity to freedom, to music in its unbound, unfettered aspect, calls at times for some minimal moments of binding, for points at which a space of relations, floating free, finds a means of manifestation, finds a “punctual” mooring in what is heard.

X. Conclusion: What does it mean to follow?

1. You go where I go

"You follow me", said Ornette to Charlie Haden at one of their earliest meetings, sometime in the late 1950s, "and you go where I go". But what, given our attention to Ornette's discourse, to all of its enigmas and complexities, does it mean to follow? What does it mean to go where Ornette goes? In this final chapter, we offer a summary of the different answers we have given to this question as a consequence of our analysis of Ornette's discourse, as well as a brief account of how these different strands might be drawn together. This will include a short recapitulation of each chapter, including the chapters on background literature and on our tools and approach, as well as an account of the limitations we have encountered in the development of this approach. We then offer some possible directions for further work.

Recapitulation

In chapter II, we conceived of the thesis question in terms of three key terms – *movement*, *discourse* and *space* – offering an overview of the current approaches to Ornette's work, as well as to these three themes more broadly. We identified the need for an approach that would give attention to Ornette's discourse as a means to approach these questions without the assumption of idealised figures, such as the "competent listener", or the authority of authorial intention, and in chapter III and IV, we offered such an approach, drawing in elements of a Lacanian discourse analysis, a notion of the signifier developed from the theory of transference, and elements of neighbourhood topology, including the notion of a relation.

With these tools in hand, in chapters V – IX we then turned to an analysis of Ornette's work, with each of these chapters oriented with respect to a fragment, or fragments, from Ornette's discourse, bearing directly and indirectly on his music, and implying a particular form of relation. The relation, we said, may constitute a vehicle, a means of movement, characterising the way "you" and "I" traverse a space, and thus how "you" *follows* "I", how "you" "goes" "where" "I" "goes". The relation may also, however, offer the means to conceive the constitution of that space itself, with an ordered space, for instance, a space with an order relation on that space, a metric space a space with a distance function on that space, and so on.

Thus, in chapter V, we introduced the notion of a *tonic relation* in the context of the problem of knowledge, of "knowing where to go". We drew in the work of William Rowan Hamilton, and, in particular, his notion of a vector, as a *vehicle* that moves "moveable points" from A to B, from analyzer to analyzand, from known to unknown. We developed two forms of vector – *tonic* and *situating* – to account for the solution Ornette proposed to the problem of knowledge, which he gave in terms of "tonics" and "thirds". And we discovered that "tonic" already implies a structure of convergence, of following, it already implies that all of the points internal to the same, tonic-oriented space "go where the others go".

In chapter VI, we turned to the notion of a *free relation* and the effect of invisibility it produces,

linking Ornette's reference to the "free direction" of "Invisible" to transposition, to Hamiltonian *analogy* – the "transference of a relation" – as well as to the notion of a *free vector* – a vector the identity of which is contingent not on the identity of its spatial position, but of its magnitude and direction. The shift from points to relations implied by these three, related notions – transposition, analogy, the free vector – then had consequences at the level of what it means to follow, of what it means to go where another goes, implying that the point to which "you" and "I" converge is now a *relation*, with no necessity that such a convergence to relations would imply a convergence at the level of the points that manifest those relations.

In chapter VII, we dealt with the question of *solitude*, and the relation it implies, finding in Ornette's idiosyncractic definition of an "Interval" that "has everything in it" a correlative to the solitude of the "Lonely Woman", a woman "who had absolutely everything you could desire in life and" who had "the most solitary expression". Linking this solitude to the topological notion of an "isolated point", as well as to the har-mo-lodic structure of "notes-as-chords", we conceived of the space of an Ornettian Movement as a disconnected space – disconnected, that is, only insofar as its connections are "disavowed". And we conceived the *cure* for solitude as both the avowal of such connections and of their lack.

In chapter VIII, the second of our chapters on "Lonely Woman", we gave attention to the temporal aspect of Ornette's famous piece, with its distinctive drawing together of melody and accompaniment, finding in Ornette's reference to "tension" – to the tension that he sees in all love conflicts – a kind of *no relation*, the absence of a relation correlative to the drawing together of two entirely distinct spaces, two entirely distinct forms of time, as implied by Ornette's notion of *spread rhythm*.

And, finally, in chapter IX, we turned to "Prime Time For Harmolodics",[391] the text that most closely approximates a manifesto for Ornette's approach, with particular attention to its reference to "unison", which we conceived in terms of *unison relations*. *Unison*, in Ornette's sense, we said, implies the shift we had already discerned in chapter VI, from points to relations, from a "unison", a being *one*, the "same", *equivalent* – an identity – at the level of the sound that pertains to points, to a *Unison* at the level of the "sound" that pertains to the relation. This shift, from the being-one of *point-sound* to the being-one of *relation-sound*, invokes, however, another "one-sound", another "unison", which is the sound of the *voice* that pertains to a phantom "one" – "the sound of one's own voice" – which emerges as the sound of a point that would *be* the identity, *be* the "one", lost, made "invisible", by the shift from points to relations Ornettian Unison implies.

Convergent movements

Each of the relations these chapters investigate thus imply movements through spaces in the direction of particular points of consequence, of "what follows", the convergence to which implies a particular sense of what it means to follow, of what it means to "go where I go". In the chapter on *tonic relations*, "to follow" means to *converge to tonic.* In the chapter on *free relations*, the shift from points to relations implies *convergence to a (free) relation.* In the chapter on *solitude relations*,

391 Coleman, "Prime Time for Harmolodics".

convergence is *"har-mo-lodic"*, moving in two directions, implying convergence to a "disavowed" point of harmonic orientation, as well as to another solitude, another Interval-point of melodic consequence, with a *cure* for solitude implying *convergence to free difference*, to a relation of difference, regardless of the points that manifest that difference. In the chapter on *no relations*, to follow means to *converge to "tension"*, to *no relation*, to a "no relation" manifesting the tension Ornette sees in all love conflicts. And, in the chapter on *unison relations*, to follow means, again, to *converge to relations*, with Ornettian Unison implying, as with a *free relation*, both a Unison at the level of the relation, regardless of the points that manifest that relation, as well as a "unison" at the level of a phantom "one" emerging in the shift from points to relations such a space of relational Unison implies.

In this sense, Ornette's discourse implies a distinction between four different forms of convergence: 1) convergence at the level of *points* 2) convergence at the level of *relations*, with no necessary implication of convergence at the level of the points that manifest these relations 3) convergence at the level of the *Idea*, which is to say, convergence at the level of a relation in its "disavowed" form, and 4) convergence at the level of the phantom point-effect, of a "one" that is "lost or hidden", made "invisible" by the shift from 1) to 2).

A transpositional logic

In a first instance, we could say, then, that Ornette's discourse is marked by the logic of *transposition*, in its broadest, most general sense, where transposition implies *the transference of a relation* from one set of points to another, implying a relational identity sufficient to produce an experience of identity at the level of the spaces these points manifest. If such transferred relations *sound*, if they are, in the sense implied by Ornette's discourse, *relation-sound*, transposition thus implies the *transference of a sound*, such that two distinct sets of points, each with their own *point-sound*, the relation of one with respect to the other is one of "disunison", will nonetheless have the "same sound", will be "in Unison", insofar as they manifest the same relations – the same *relation-sound* – as implied by one of Ornette's definitions of harmolodics:

"Harmolodics means transposing any sound whatsoever into your own playing, without having to give up your own identity in the process".[392]

However, this shift to a transpositional logic, as we have seen, is complicated by two features. First, the shift from points to relations transposition implies produces *phantoms* – the experience, in other words, that such a shift hides, makes "invisible", determinate points to which the identity of the space is properly to be bound – the point that "is" the tonic, the frequency that "is" the pitch, and so on – correlative to the effect of loss or hiddenness produced by (the shift from points to relations implied by) "Stewart's law". Second, at moments in Ornette's discourse, the shift from points to relations his work implies is "disavowed" by a shift (back) from relations to points, as, in particular, in the case of the Ornettian Interval, defined not as a *relation* – a "distance" between points – but as *the point itself*, with the disavowed interval-relation now an Idea it "carries" "in it", as its internal "sound substance". In chapter VII, we linked this shift back from relations to points to *solitude*, to

392 Wilson, *Ornette Coleman: His Life and Music*, 87.

the experience that a point has something – an Idea – "in it" correlative to its independence, its isolation, from other points, with the *cure for solitude* thus implying an avowal that the Idea is, in fact, an effect of the point's relation to what is *outside* it, a relation to which, in a space of *free difference*, it *lacks.* If such a cure for solitude would seem to imply that Ornette's discourse is to be situated once again on the side of the relation, however, in the final chapter we encountered yet another shift to determinate points, in the insistence that there is a clef proper to each instrument – that an alto instrument must play in the alto clef, a tenor instrument in the tenor clef, and so on.

However, perhaps this uncertainty in Ornette's discourse, this shift from points to relations and back again, reflects an uncertainty at the heart of "freedom" itself. For, if freedom implies a space conceived in terms of the identity of the relation, regardless of the points that manifest that relation, such a space, in order to "appear", become "visible", audible, at all, *must nonetheless rely on points to manifest itself*, it must rely, in other words, on a shift (back) from relations to those points from which, as "free", it has freed itself. In order for a free space to appear, to become "visible", as *free*, in other words, it must risk *appearing*, it must risk, that is, appearing as "bound", as *not free*, as a space the identity of which is to be conceived in terms of determinate, punctual manifestations, rather than the relations these particular manifestations manifest. And if such a misperception calls again for the inverse movement from points to relations, which would free relations from their punctual binds, this misperception regarding points is nonetheless in danger of persisting in a "phantom" form, as the promise of a return to points in terms of which the identity of the space would properly to be conceived, but that is now hidden, made "invisible", by the shift from binding to freedom. Harmolodic thought would thus seem to vacillate in this split, this non-coincidence, of points and relations, points and Ideas, here to be situated on the side of the relation, here on the side of the point, insofar as the relation is "bound" to it in its disavowed form as the Idea it carries "in it", and here to be found on the side of neither point nor relation, but on the side of a phantom that is reducible to neither, produced, instead, in the shift from one to the other.

I don't want them to follow me

"You follow me", says Ornette, "and you go where I go", but in his interview with Will Kineally for *Cadence* magazine in October 1995, Ornette made a statement that not only calls into question the notion that to play with Ornette is to follow, to "go where Ornette goes", but that seems, instead, to *directly contradict* this earlier statement to Charlie Haden, the one about following, made at one of their first meetings, sometime in the later 1950s:

> ...human existence exists on multiple levels, not just on a two-dimensional level, not just having to be identified with what you do and what you say. Those things are the result of what people see and hear that you do. But the human beings themselves are living on a multiple level. That's how I have always wanted musicians to play with me: on a multiple level. I don't want them to follow me. I want them to be themselves, but to be with me".[393]

"I don't want them to follow me", says Ornette, "I want them to be themselves, but to be with me". What to make of this surprising denial of something that, to Charlie Haden in the later 1950s, was

393 Coleman, interviewed by Jarrett.

clearly affirmed, the wanting at the level of following, this demand that Haden follow him, that he goes where Ornette goes? Why this apparent reversal from wanting to not wanting, from following to not following? How could something that was so clearly affirmed now be so emphatically denied?

If “to follow” means “to go where I go”, as we have now said many times, if “to follow” has, in other words, the structure of convergence, of movements – goings – that converge to common “wheres”, common endpoints, it is possible to see that Ornette's discourse implies followings, convergences, that are, at once, *not-followings*, and not-followings that are, at once, *followings* – a space, that is, in which convergence at one level coincides with divergence at another, and vice versa. The shift from points to free relations implies that the identity of the space is to be situated at the level of the relation and not at the level of the points that manifest those relations, and thus that following, convergent movement, “going where the other goes”, at the level of the relation does not necessarily imply a following – a going where the other goes – at the level of the points that manifest those relations. One can, in other words, “play the same space” even if the points that manifest that space are entirely different. Even if the relation is experienced in its “disavowed” form as Idea, there can be an effect of convergence, of following, of *unison*, at the level of Idea, without this necessarily implying a unison at the level of the points that “carry” that Idea, as implied by Ornette's assertion that C and E are “higher” than D and F “by [Idea] sound”. And if the shift from points to relations produces phantoms, a lost or hidden “one”- point in terms of which the identity of the space is properly to be conceived, this “one”, this “unison”, only emerges insofar as the shift from points to relations implies the possibility of manifestations that are *not one*, that are not “the same” – insofar, that is, as it implies the possibility that there is a difference, a disunison, at the level of the points manifesting the same, Unison relations. Phantom punctual followings – the phantom points to which both “you” and “I” (would) go – only emerge, in other words, insofar as, in the manifestations of a Unison relation, “you” does *not* necessarily “go where “I” goes, does *not* necessarily follow, insofar as there is a possibility of Unison in disunison, relational identity in the midst of punctual difference.

2. Contribution

What this thesis contributes is a new approach to the analysis of discourse, informed by a Lacanian discourse analysis, but distinct, first, insofar as its approach is particular to the singularity of Ornette's discourse, and, second, insofar as it departs from a Saussurean emphasis by giving priority to the notion of transference, and thus to an approach to language emerging from the philosophy of the Scottish Enlightenment. The virtue of such an approach to Ornette's speech, particularly insofar as it bears directly on his music, is that it has enabled us to address the question at the heart of the thesis, of what it means to follow, to “go where I go”, without assuming, on the one hand, that such movements are somehow immanent to his music, awaiting univocal apprehension by a “competent” listener, and, on the other, that the author's *intentions* with regards his music are to be given priority. Rather, by giving priority to Ornette's *speech*, by making Ornette's *speech* an authority, aside from his intentions regarding that speech, we have been able to give attention to the implications of this speech for an experience of Ornette's music that carry us in the direction of consequences beyond the point to which Ornette's thought has already gone, and of which he may not himself have been

consciously aware.

3. Limitations

What is missing from our account, what cannot be accounted for in terms of the distinction between the convergence of points, of relation/Ideas, and of phantom point-effects, is the "tension", the "no relation", we discussed in the chapter on the temporal aspect of Ornette's music. This "tension" between two different kinds of time implies no convergence, even in the Ornettian sense of a "parallel" relation in common, except the minimal sense of a *temporal* convergence – a "temporal unison" – of two distinct times happening *at the same time*. There is thus a question, to which we will not propose an answer, but which will, instead, form the basis for future work, which is the following: what is the relation, if any, between the shift from points to relations, from "punctual" to relational Unison, together with the phantom effects of "invisibility", of veiling, it produces, and the appearance of a "no relation"? What, in other words, is the relation between a space of freedom and a space riven by a "no relation", a "tension", that has something to do, as Ornette says, with conflicts in love?

In addition to this unanswered question, we recognise a number of further possible limitations to our approach, which we present as three additional questions we have not (yet) been able to answer.

1) First, what is the relation between discourse and experience, and, in particular, between an analysis of Ornette's discourse regarding his music, and an analysis of Ornette's experience of his music? Whilst psychoanalysis has discovered new significance in apparently insignificant elements of speech – jokes, verbal slips, homophonic consonances, and so on – finding new ways in which a subject is intimately implicated in the signifiers they choose, the force of such interpretative interventions rely, to an extent, on specifically clinical modes of “verification” – most notably, perhaps, a particular form of surprise – requiring the presence and participation of the subject missing from our text-oriented mode of discourse analysis.

2) Second, what is the relation between the findings of a study such as ours, founded as it is on the singularity of Ornette's speech, and findings regarding musical experience more generally? If there is a sense in which our findings are irreducibly singular, by which means can such experiences be linked together, forming something like a “collective”?

3) Third, and related to the second question, whilst what presents itself as “general” is often a disavowed generalisation of what is irreducibly singular – one of the key reasons we have chosen the approach we have – if there exist “parallelisms” between, for instance, love and mathematics, as proposed by Burgoyne, if, in other words, for instance, *all* structures in the field of love find their parallel in structures in the field of mathematics, and vice versa, what sense to give to the notion of “singularity”? Is there a mathematics of singularity that does not reduce every structure to the particularisation of a more general mathematical class?

We now offer some possible directions for further work, but, in a sense, these questions themselves

already suggest such directions.

4. Future work

We hope to develop the work elaborated in this thesis in three main directions, each of which are either directly present in this thesis or implied by it. These three directions are *surprise*, and the capacity music has to produce such effects; *cure*, including what Ornette has called "sound medicine"; and *voice*, with particular relation to Lacan's work on the voice, as developed by Chion[394] and Dolar.[395] These three themes are, of course, intimately related to one another, with surprise, for instance, a key aspect of psychoanalytic interpretation, particularly those moments that might be linked to the cure, and surprise is also implied by ruptures in signifying chains, which Jacques Alain Miller, for instance, emphasises in relation to the emergence of the voice.[396]

These three coordinates, and in particular the notion of cure, situate our work in some proximity to the general field of music therapy, which may also suggest some potential avenues for future collaboration. However, it is worth noting that we are interested in psychoanalysis particularly insofar as it is *not* a "psychotherapy", with psychoanalysis distinguishing itself from the broader spectrum of psychotherapies, perhaps, to the extent that it pushes towards a "point of no return", a point of no turning back with respect to knowledge.[397] Of course, such a distinction in relation to music raises many questions about the relation between music and psychoanalysis, which it will take considerable work to disentangle.

394 Chion, *The Voice in Cinema.*
395 Dolar, *A Voice and Nothing More.*
396 Miller, "Jacques Lacan and the Voice".
397 This is the distinction proposed by Burgoyne in "What is a Psychoanalyst?"

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