

‘Listen to My Voice’:

**The Evocative Power of Vocal Staging in Recorded Rock Music
and Other Forms of Vocal Expression**

LIVERPOOL.

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ABSTRACT

This thesis presents the results of a research centred on voice manipulation, or, as suggested by the title, the *staging* of voice in recorded rock music and in other forms of vocal expression. The main hypothesis behind this study is that voice manipulation can give rise to a range of connotations and effects whose ‘emergence’ in the listener’s mind is not arbitrary, but rather coherent. Arguments used to support such a thesis are taken from direct analysis of songs in the rock repertoire, from the empirical data of a reception test and from information provided by secondary sources. The dissertation is divided into five chapters, excluding the General Introduction and the General Conclusion. Each chapter deals with a particular aspect of vocal staging. Chapter 1 presents a historical overview of *acoustic* vocal staging practices, i.e. those which do not rely on electricity. It is shown that vocal staging, far from being a recent practice, probably finds its origins as far back as in prehistoric times. A similar historical approach is adopted in chapter 2 which describes vocal staging practices developed following the advent of electricity. Because of the large amount of information, and because particular emphasis has been placed on the study of rock music in chapters 3 and 5, chapter 2 discusses examples of vocal expression found in other repertoires than recorded rock music. The examples in chapter 2 are drawn from the world of cinema, theatre, radio, sound poetry, etc. Pioneering use of electric vocal staging found in early rock music, such as (1950s) slap echo and early flanging effects are described in chapter 3. Chapter 4 then presents and discusses results from the reception test. By proceeding in this way, the subsequent analyses in chapter 5 are underpinned, not only empirically by the test results but also by the observations presented in earlier chapters. Chapter 5 presents two kinds of analysis: (i) of individual vocal staging effects as exemplified in numerous recordings scattered throughout the rock repertoire; (ii) of a wide range of vocal staging phenomena occurring within one and the same piece of recorded rock music (Alanis Morissette’s ‘Front Row’).

Foreword

I thought I was about to die. The manoeuvre was so painful that I was screaming in the ears of my torturer, whose thin and sharp instrument was digging in the blood-soaked flesh, desperately seeking for some harder matter. He finally abandoned the task and decided that I was to go to the hospital: my tooth, now in pieces, would not come out as easily as my dentist originally thought. I had to be fully anaesthetised. I was in my early teens and still considered the syringe needle, along with the dentist's drills and pliers, as an instrument of torture. I therefore chose the mask. The anaesthetist announced that it would take some ten seconds before I go to sleep. Then I started to breathe the malodorous gas. It is at that moment that I experienced an audio phenomenon that was to intrigue me for quite a long time. Indeed, the anaesthetist's voice started to bounce in my head at a frenetic rate. As I was listening to the effect—rather than to the actual words—I realised that it was possible to *exactly* reproduce the sound using an electronic delay. Then I woke up with one tooth missing, but it was worth it. I started listening to all kinds of sound effects happening in nature, ultimately ending up in recording studios, blissfully ignorant that I would some day turn the topic into a doctoral dissertation.

This research and the resulting dissertation would of course not have been possible without the help of many people. First, I would like to thank my supervisor, Philip Tagg, who accepted with great enthusiasm to guide me in this strange and often difficult path. His

meticulousness and rigour, as well as his unswerving support and sense of humour have made this academic marathon both intellectually challenging and agreeable. I also wish to thank David Horn, Natasha Gay, and everyone else at the Institute of Popular Music for their constant support during these past five years. It is very difficult to write a doctoral dissertation in a foreign language, even more so in academic English which seems to be characterised by an implicit sense of style and presentation that is virtually impossible to acquire in the space of a few years. It is for this reason that I would like to thank Philip Tagg and Karen Collins for helping me reformulate some of my ideas into an acceptable version of written English. Thanks also to Paule-Andrée and Lou-Adriane who have endured my sudden changes of mood and virtual absences, both of which apparently form one body with any work of this type. Also, thanks to Chantal, Denis, Guy, Michèle, and everybody else at the CRELIQ (Université Laval) for their precious support during the last (crazy) months of writing. A final big thank-you to my parents, Nicole and Paul, who have always supported me during the whole of my studies. This research would not have been possible without the financial support from the SSHRC (Social Sciences and Humanities Research Council of Canada) and the Fonds FCAR (Fonds pour la Formation de Chercheurs et l'Aide à la Recherche). I hope this dissertation will encourage other people to carry on the idea, to expand it or adapt it to other realities. The world of sound is too often neglected in favour of the visual.

Table of Content

Abstract	iii
Foreword	iv
Table of Content	vi
Tables and Figures	ix

General Introduction

0.1. Presentation.....	1
0.1.1. Make-‘Believe’	1
0.1.2. Definitions	4
0.1.3. Scope	7
0.2. Background.....	11
0.3. Theoretical Issues and Problems.....	15
0.3.1. Vocal Staging Effects as Technological Musical Parameters.....	15
0.3.2. Intramusical Relations and Extramusical Significations.....	18
0.3.3. Text-Music Relationships.....	20
0.4. Methodology	20
0.4.1. Empirical v. Hermeneutical Approaches.....	20
0.4.2. Preliminary Epistemological Considerations	21
0.4.3. Listening Conditions.....	22
0.4.4. Notation.....	27
0.5. Content	28

Chapter 1: Historical Survey of Acoustic Vocal Staging

1.0. Introduction.....	30
1.1. Practices in Western Cultures	32
1.1.1. Prehistory.....	32
1.1.2. Antiquity.....	41
1.1.3. Western Acoustic Music.....	51
1.2. Practices in Non-Western Cultures	60
1.2.0. Introduction	60
1.2.1. Mirlitons	61
1.2.2. Resonators	64
1.2.3. Self-Distortion of the Voice	67
1.3. Summary.....	70

Chapter 2: Pioneering Uses of Electrical Vocal Staging in Radio, Theatre and Cinema

2.0. Introduction.....	71
2.0.1. Staging the Voice in the Age of Electricity.....	71
2.0.2. The Microphone	73
2.1. Radio	76
2.1.0. Introduction	76
2.1.1. Radio Drama.....	76
2.1.2. Sound Poetry and <i>Musique concrète</i>	79
2.2. Theatre.....	83
2.3. Cinema.....	85
2.3.0. Introduction	85
2.3.1. Voice Configurations in Cinema.....	89
2.3.2. Subjective, Expressionistic and Poetical Effects	102
2.4. Summary.....	109

Chapter 3: Vocal Staging in Early Recorded Popular Music

3.0. Introduction: Aesthetics of Recorded Music	111
3.1. Vocal Staging Practices.....	116
3.1.1. Artificial Reverberation and Echo.....	116
3.1.2. Overdubbing	126
3.1.3. Phasing Effects	128
3.1.4. Speed Modification	137
3.2. The Advent of Stereophony.....	138
3.2.1. Historical Overview.....	138
3.2.2. Impact on Spatial Acoustic Imagery	139
3.3. Summary.....	143

Chapter 4: Intersubjective Interpretation of Vocal Staging: A Reception Test

4.0. Introduction.....	144
4.0.1. Presentation	144
4.0.2. Issues and Method	145
4.1. Instrument Construction	149
4.1.1. Selection of Concepts.....	149
4.1.2. Selection of Scales.....	150
4.2. Sample and Procedure.....	151
4.2.1. Sample Description	151
4.2.2. Test Procedure	152
4.3. Results and Discussion.....	153
4.3.1. Overall Results	153
4.3.2. Factor Analysis	155
4.3.3. Final Results	160
4.4. Conclusion	164

Chapter 5: Vocal Staging Effects in the Rock Repertoire

5.0. Introduction.....	167
5.0.1. Issues and Method.....	167
5.0.2. Aesthetic Considerations.....	170
5.1. <i>Proskênion</i> : Spatialisation of Recorded Voice.....	175
5.1.0. Introduction.....	175
5.1.1. Environment.....	177
5.1.2. Stereophonic Location.....	187
5.1.3. Distance.....	190
5.2. <i>Prôsôpon</i> : Electric Alteration of Voice Timbre.....	195
5.2.0. Introduction.....	195
5.2.1. Phasing.....	197
5.2.2. Saturation.....	205
5.2.3. Other Types of Alteration.....	207
5.3. <i>Chronos</i> : Manipulation of Voice in Time.....	208
5.3.0. Introduction.....	208
5.3.1. Long Echo.....	211
5.3.2. Reiteration.....	218
5.4. Analysis of Alanis Morissette's 'Front Row' (1998).....	220
5.4.0. Introduction.....	220
5.4.1. General Considerations.....	221
5.4.2. Discussion.....	225
5.5. Summary.....	234

General Conclusion

6.1. General Summary.....	237
6.2. General Observations.....	239
6.2.1. All Too Human.....	239
6.2.2. Extramusical Significations (Connotations).....	241
6.2.3. Intramusical Relations.....	243
6.3. Further Research.....	247
6.3.1. Toward a Semiotic Model.....	247
6.3.2. Extension of the Notion of Staging.....	249
6.3.3. Reception Tests.....	250
6.4. <i>Le mot de la fin</i>	250

Bibliography

A. Writings.....	252
B. Audio Recordings, Films and Printed Music.....	279

Appendices

Appendix 1: Cover Page of '99 Out of a Hundred Wanna Be Loved' (1931).....	290
Appendix 2: Reception Test Sample Form.....	291

Tables and Figures

Tables

Table 2.3-1: Châteauvert's Voice General Categorisation.....	90
Table 4.3-1: Overall Results.....	154
Table 4.3-2: Factor Analysis Solution.....	157
Table 4.3-3: Final Results.....	161
Table 5.0-1: General Categorisation of Vocal Staging Effects.....	168

Figures

Figure 3.1-1: Introductory measures of Patti Page's 'Confess' (1948).....	121
Figure 3.1-2: Flanging Effects in Miss Toni Fisher's 'The Big Hurt' (1959).....	134
Figure 4.2-1: Subjects' Profile.....	152
Figure 4.3-1: Graphic Representation of Final Results.....	162
Figure 5.3-1: Peter Gabriel's original and remixed versions of 'Kiss That Frog'.....	216
Figure 5.4-1: Alanis Morissette's 'Front Row' (1998).....	224
Figure 5.4-2: Stereo Movement (Alanis Morissette's 'Front Row').....	230

General Introduction

Les alentours instrumentaux de la voix, tout ce qui dans l'émission vocale relève déjà de l'ordre instrumental, tout ce que déforme un procédé externe [...], là se trouve une matière authentique d'étude.

(Schaeffner 1968: 24)

0.1. Presentation

0.1.1. *Make-'Believe'*

Toward the end of 1998, commercial radio stations around the world were untiringly playing a new song by Cher. In almost all reviews of 'Believe' (1998), we were able to trace at least one comment (positive or negative) about Cher's voice. More precisely, and despite their often divergent critical evaluations, it was around the *electric manipulation* of her voice that most comments seemed to converge, as illustrated by the four following short excerpts.

When I first heard it, I thought it might have been someone trying to 'sound like' Cher, because it so easily grooves with the 'Top ten at Eight' mix. *The musical hook is an artfully placed distortion of her voice in the chorus*, which really makes the song memorable. It's just plain good.¹

¹ Brian Berneker. http://hamiltononline.com/music/cher_believe/index.html. (Visited 27 February 2000), my italics.

From the opening cut, 'Believe', *with it's completely uncalled for electronic distortion of 'Cher's' voice*, this album does its best to weaken the evocative voice that has been her major strength.²

Produced by the same team that pushed Gina G to success (yes, really), *the thing that everyone immediately notices about 'Believe' are all the wacky vocoder effects*.

Apparently these were actually Cher's idea, which seems plausible given that she was actually around when vocoders first took off in a big way.³ Certainly she's done something more interesting with them than the Beastie Boys did with 'Intergalactic'.⁴

Cher herself merely moves through the beat factory with one drab vocal range, blending butt-shakers (like ['Believe'] and 'Strong Enough') and semi-ballads ('Dov'e L'Amore') into one endless, and personality-free, thump session. Anyone could have been signed on as the voice in front of these generic tracks (which at times slip into late-'80s glossy, overproduced plastic); Cher brings only her name and star clout, no soul whatsoever.⁵

The latter association, hardly concealed, between the presence of the 'overproduced plastic' artificial effect and Cher's immutable 'plastic beauty' was of course inevitable... But beyond that, it was the sound effect's 'public' *impact* that was striking. In Cher's case, both the relative novelty of the sound effect and its utilisation by a famous artist not usually associated with this kind of technological artifice seem to be at the root of such a widespread interest. However, voice manipulation has existed long before. For example, who does not recall Elvis's processed voice in 'Heartbreak Hotel' (1956), or the heavily distorted lead vocal

² Don Jehs. http://www.amzmusiczine.com/02_99/newrel18t.htm. (Visited 27 February 2000), my italics.

³ Of course, we get alternative versions concerning Cher's actual input: 'Although the vocoder effect was Mark [Taylor's] idea, the other obvious vocal effect in 'Believe' is the 'telephoney' quality of Cher's vocal throughout. This idea came from the lady herself—she'd identified something similar on a Roachford record and asked Mark if he could reproduce it' (Sillitoe 1999: 40).

⁴ Angus Kdman. <http://apcmag.com/gusworld/singles/believe.htm>. (Visited 27 February 2000), my italics.

⁵ Michael Gallucci. <http://www2.tunes.com/release/default.asp?from=&relid=245884>. (Visited 27 February 2000).

in King Crimson's '21st Century Schizoid Man' (1969)? Younger readers might better remember Jas Mann's heavily processed voice in Babylon Zoo's 'Spaceman' (1996). Moreover, the practice is far from being restricted to rock music. In cinema, radio or television, who can fail to notice the frequent presence of reverberation when a character is dreaming, thinking, or remembering past events? Who, as a child, was never fascinated with the sound of his/her own voice when speaking, singing or shouting in empty glasses, pipes, or large resonant rooms or caves?

Voice manipulation is not usually brought to public attention in reviews or other discussions of popular music. In this case, then, Cher's 'Believe' might be an exception. It is nevertheless clear that an apparently subtle and secondary feature such as vocal manipulation has a definite effect on the listener. But what are these effects? Or, to put it in another way, what are the possible connotations conveyed by such voice manipulation? What, if any, is the impact of such manipulation on the listener's overall understanding of a rock song—or of a film, or of any other artistic work including amplified or recorded vocals? Moreover, what are the origins of such practices of vocal manipulation?

This thesis presents the results of research centred on voice manipulation, or, as suggested by the title, the *staging* of recorded voice.⁶ More particularly, we will be mainly concentrating on voice manipulation in rock music audio recordings. The main hypothesis behind this study is that voice manipulation can give rise to a range of connotations and effects whose 'emergence' in the listener's mind is not arbitrary, but rather coherent. Arguments used to support such a thesis are taken from direct analysis of examples of the

⁶ 'Vocal staging' is defined in the following sub-section.

rock repertoire, from the empirical data of a reception test and from information found in secondary sources. However, before examining this background, as well as the issues and methods presented later, it is necessary to put forward some preliminary definitions.

0.1.2. Definitions

0.1.2.1. Vocal Staging

In the context of this dissertation, the expression ‘vocal staging’ is used in a general sense and refers to any deliberate practice whose aim is to enhance a vocal sound, alter its timbre, or present it in a given spatial and/or temporal configuration with the help of any mechanical or electrical process, presumably in order to produce some effect on potential or actual listeners. For example, exploiting the particular acoustics of a given building—such as a cathedral—while speaking or singing constitutes a case of vocal staging. Similarly, the very fact of recording, transmitting, or amplifying a voice with the help of a mechanical or electrical transducer (such as a microphone) is also considered as a vocal staging practice (see also 1.0).⁷ Consequently, alteration of a vocal sound with the help of an electrical sound processor—such as a reverb unit or flanger—simply constitutes a *particular* form of vocal staging.⁸ On the other hand, altering vocal sound without the help of some external device—for example, speaking in a very high tone—is *not* considered here as vocal staging.⁹ Of course, the concept of ‘staging’ can be expanded to any other sound source, or ensemble of

⁷ If pushed, one could consider some day-to-day situation where some means is used to present the voice sound in a particular way as vocal staging: for example, placing one’s hands around the mouth in order to direct the vocal sound.

⁸ It is for this reason that terms such as ‘alteration’, ‘processing’, ‘manipulation’ or ‘transformation’ have been discarded; indeed, their respective meaning has been felt too restrictive, putting a strong accent on the process itself. On the other hand, the term ‘staging’, which of course evokes the act of putting up a theatrical work on a stage, can encompass a wider set of practices.

⁹ Some extreme cases of self-altered voice are nonetheless briefly examined in section 1.2.3 below.

sound sources. However, for reasons given in 0.1.3.2.1 below, this dissertation concentrates on the voice.

0.1.2.2. Vocal Setting

The expression ‘vocal setting’ refers to a *specific* configuration of vocal staging whose characteristics are described in terms of loudness, timbral quality, and spatial and temporal configuration.¹⁰ It thus contrasts with ‘vocal staging’ in that ‘vocal staging’ refers to the practice taken *as a whole* on an abstract level, while ‘vocal setting’ refers to a specific ‘embodiment’ of the (general) practice of staging. In music, the relationship between ‘harmony’ (general) and a given ‘harmonic progression’ (particular) could be considered as an analogy of the relation between ‘staging’ and ‘setting’. Another analogy could be drawn from theatre where ‘staging’ could be compared to the general notion of ‘mise-en-scène’, while a ‘setting’ could be compared to a particular ‘effect’ of mise-en-scène occurring at a given time (or lasting a given duration). Such effect of mise-en-scène would be the result of a combination of features (this particular light colour, beamed from that particular angle, toward a character located in that particular area of the stage, etc.). Consequently, in a recording, a voice sounding from the left with a given amount of flanging will be said to display this particular setting.

0.1.2.3. Recording

In general, the term ‘recording’ can refer to two different things. It may refer to the *carrier*, such as a given CD, a tape, a vinyl disc, a videodisc, etc. In the context of this study,

¹⁰ All these aspects of sound are discussed in more detail in chapter 5.

however, the term ‘recording’ refers to the ‘sonic content’ that is ‘encoded’ (digitally or analogically) on a given carrier. A recording thus lasts a given amount of time, with a beginning and an end. In recorded rock music, a *recording* corresponds most usually to a given recorded song (or track).¹¹

0.1.2.4. Vocal Stream

When we listen to a recording, or to any acoustic event, we are able to focus our attention toward specific ‘sounds’. This ability, which Albert Bregman (1990) calls ‘auditory scene analysis’ (Bregman 1990), is better known as the ‘Cocktail Party Effect’.¹² When listening to any piece of polyphonic music, for example a rock recording, it is possible to focus on one particular ‘sound’ and to follow it as an identifiable auditory strand as it evolves through time and in conjunction with other individual strands in the total polyphonic texture. The individual auditory strand on which attention is focussed may be continuous or discontinuous (for example, the words spoken by one person in conversation with others), and each of its constituent utterances will have a fixed duration, whether it be for the entire piece, as in the case of a drone, or just for one or two seconds, as with the short melodic phrases found in some types of funk and gospel music. The individual auditory strand upon which attention is focussed may be constructed around rhythmical and melodic structures (for example, a melodic line within an orchestral texture) or appear to be without motion (for example, a sustained synthesiser pedal); etc. In any case, when it is possible for the listener to track a sound and to follow it as a strand through a particular excerpt, when this sound is

¹¹ The notion of recording is further discussed in section 0.4.1 below.

¹² Put simply, the Cocktail Party Effect can be defined as ‘The ability of the human ear to pick out a single speaker in a room full of speakers’ (<http://maths.abdn.ac.uk/~igc/tch/eg3003/notes/node49.html>). (Visited 12 March 2000).

perceived as a single unit evolving in time, it will be referred to as a *sound stream*.¹³ This sound stream usually appears to have a given source, either a musical instrument, a voice, or another timbrally identifiable source.¹⁴ Consequently, in this dissertation we will sometimes refer to a ‘vocal stream’ when referring to one particular vocal line heard within a recording.

0.1.3. Scope

0.1.3.1. Corpus

0.1.3.1.1. Rock Music v. Other Forms of Vocal Expression

Our attention will be primarily directed toward recorded rock music. In the context of this study, the expression ‘rock music’ is taken in a rather general sense and therefore includes a wide range of musical styles associated with rock music (rock’n’roll, progressive rock, heavy metal, techno, hip hop, etc.). Therefore, while including the music of such artists as The Beatles, Jimi Hendrix, The Who, etc., it does not uniquely refer to the musical trend that has emerged in the 1960s in UK and USA.¹⁵ However, a substantial part of this dissertation is devoted to historical aspects of vocal staging and to its appearance in other forms of vocal expression as found in religious rites, as well as in the spheres of cinema, radio, theatre, etc. This thesis devotes considerable attention to collateral aspects of vocal staging for two main reasons. Firstly, vocal staging needs to be understood as a *general*

¹³ I am here referring to Albert Bregman’s (1990: 10) concept of ‘auditory stream’: ‘Acoustic information tells us about physical “happenings”. Many happenings go on at the same time in the world, each one a distinct event. If we are to react to them as distinct, there has to be a level of mental description in which there are separate representations of the individual ones. I refer to the perceptual unit that represents a single happening as an auditory stream’.

¹⁴ However, it might happen in musical contexts that a given melodic line passes from one instrument to another. Such a ‘melodic line’ could thus be considered as a sound stream.

¹⁵ See 0.1.3.1.3 for the period covered.

phenomenon, not just as an individual expressive ingredient in rock performance and recording. Consequently, since there exists, to my knowledge, no general study of vocal staging (see 0.2), this thesis will need to establish a historical and theoretical basis for a systematic understanding of the phenomenon. Secondly, the validity of models attempting to explain vocal staging within the rock repertoire in particular is contingent on the accuracy of observations made about the phenomenon, not only inside the sonic and social practices of that repertoire but also in other contexts. Consequently, and as presented in more detail in section 0.4, while examples taken from recorded rock music will be studied directly—i.e. through direct listening and analysis—other examples of vocal staging will be examined through the lenses of other scholars in a variety of reliable secondary sources.

0.1.3.1.2. Why Recorded Rock Music?

There are two main reasons for concentrating our study on *recorded* rock music. First, I believe, along with Allan Moore (1993: 4), that the recording constitutes the medium that is most privileged by the rock audience.¹⁶ Second, and more importantly, rock music's sound aesthetics are intimately linked to recording technology which allows the creation of various sounds and effects peculiar to the genre (see 0.3.1; 0.4.1; 3.0). Accordingly, audio recording is here considered as a *representational* practice rather than a mere means of reproduction.

¹⁶ I would even argue that the recording constitutes the primary aesthetic object from which others (video, live performances, etc.) are deriving. On that subject, Richard Middleton (2000: 77) gives the example of rock bands that 'focus their live performances on accurate reproduction of their *own* recording'.

Considered as a reproduction, recording seems to fall under the aegis of technology and engineering. Construed as representation, however, sound inherits the double mantle of art. [...] Indeed, it is recording's very ability to manipulate sound that makes it so amply worthy of our interest (Altman 1992b: 40).

It is in this light that vocal staging is viewed as one of many artistic elements in the aesthetics of recorded rock music.

0.1.3.1.3. The Period Covered: Mid 1960s to 2000

The main reason for concentrating on more recent recordings is that recent technology allows better control over sound, which, in turn, leads to an increasing number of examples presenting various types of vocal staging. Also, we can consider that the general aesthetic adopted by the majority of today's rock recording artists has, according to William Moylan (1992: 85), 'become common since the mid-1960s. In this new aesthetic, the recording medium is utilized for its own creative potentials' (see also 3.0). Nevertheless, a substantial discussion of the historical development of technology in relation to vocal staging is presented in chapter 2 (for forms of vocal expression other than rock music) and in chapter 3 (for early rock music).

0.1.3.2. Object of Study

0.1.3.2.1. Why Voice?

Reasons for focussing discussion on voice rather than on another sound source or ensemble of sound sources are clear and simple. First, voice is generally recognised as the most important sound source in popular music. This is not surprising inasmuch as voice

constitutes ‘the profoundest mark of the human’ (Middleton 1990: 262). In the context of a popular musical performance (live or recorded), voice usually becomes the sound source with which most listeners identify. As Sean Cubitt (1984: 211) puts it: ‘singing is a very personal act [...]. The voice is directly of the body, of its warm and vital interior, and our voices identify us as surely as our physical presence’. Allan Moore (1993: 158) adds that: ‘[...] voice is the primary link between the artist and the listener, being the instrument shared by both’. For his part, electroacoustician Denis Smalley (1993: 294) explains why the use of voice is prevalent in recording arts:

We can quickly distinguish between the real and unreal, between reality and fantasy, and appreciate the passage between them. The voice’s humanity, directness, universality, expressiveness, and wide and subtle sonic repertory offer a scope which no other source [...] can rival.

Finally, and directly linked with our topic, Richard Middleton (1990: 262) observes that:

[...] vocalising is the most intimate, flexible and complex mode of articulation of the body, and also is closely connected with the breath [...]. Significantly, technological distortion of voice-sound (through use of a vocoder, for example) is far more disturbing than similar treatment of instrumental playing [...].

There is, however, another, more ‘practical’, reason for choosing voice as our main object of study: if our main aim is to look at how the practice of staging can potentially produce ‘meaning’, the fact that voice in rock music often carries words constitutes an important additional ‘clue’. Moreover, voice in itself carries much more information than the semantic value of the actual words it utters (paralinguistic information). Consequently, the many layers of information related to voice and its corresponding setting can help us better understand the role the setting might take. It is of course a matter of *interaction*, since a

setting cannot sound by itself: by definition, a setting always ‘stages’ something (in our case, a given vocal stream). This is a question to which we shall soon return (0.3.3).

0.1.3.2.2. Why Staging?

The primary reason for having chosen vocal staging as a research topic is the fact that musical elements resulting from the use of technology—what I will be calling ‘technological musical parameters’—have in general been traditionally neglected in discussions of rock music. The next section deals with this particular question in more detail. From a more personal perspective, I believe that interest in the practice of vocal staging comes from my own practical background as studio engineer and producer. While in the studio, I would often ask my collaborators questions like: ‘why do we want reverb here?’ Even though I was ‘instinctively’ convinced of the ‘necessity’, or at least the relevance, of using such or such an effect, my ‘academic’ side never stopped asking questions.

0.2. Background

To my knowledge, no specific study has been exclusively devoted to the general topic of vocal staging. However, there are two works whose object of study is rather close to what is presented here. The first is Antoni Gryzik’s (1981) dissertation about the *mise-en-scène* of sound in cinema.¹⁷ I have chosen not to use Gryzik’s work as a frame of reference for three main reasons. Firstly, Gryzik’s research is about the cinema, not about popular music; secondly, it deals with the staging of sound in general, not with voice in particular; finally, and most importantly, most of Gryzik’s observations are rather subjective and suffer from a

¹⁷ See also Gryzik 1984.

lack of source reference. I will nevertheless refer to Gryzik's work when necessary.¹⁸ William Moylan's *The Art of Recording* (1992), on the other hand, which constitutes the second and, in my opinion, more important of the two works, relates quite closely to my subject in that it reveals the artistic potential of audio recording on the basis of a clear aesthetic position. Our two objectives are similar, since mine is to present the potential expressive power of a particular aspect of audio recording, namely vocal staging. Furthermore, Moylan proposes a useful frame of reference and a corresponding 'vocabulary' for denoting aspects of sound generally omitted from conventional discussions of music. Despite the fact that its level of precision exceeds that required by this dissertation, the very act of providing such a detailed vocabulary provides invaluable descriptive tools.¹⁹ However, *The Art of Recording* is more or less conceived as a 'manual' for the audio recording artist (recordist), and therefore approaches all aspects of sound from a general perspective. Consequently, vocal staging is not treated as such. I will nevertheless strongly rely on many of Moylan's observations and theoretical models in the course of this dissertation (especially in chapter 5).

Apart from the two works just mentioned, references to vocal staging are generally scattered among a large number of writings from a wide range of disciplines, and are usually included as just one of several elements relating to the specific topic each study. Accordingly, we will start with the body of writing that is of most interest for us: recorded popular music.

¹⁸ As a matter of fact, it is thanks to Gryzik's terminology that I have adopted the expression 'vocal staging'. Michel Chion's *La voix au cinéma* (1982) also explores aspects of vocal staging, but is not exclusively devoted to the subject. Rather, it presents a study of voice in general in the context of cinema. Some references to Chion's book are to be found in this dissertation, especially in section 2.3 about cinema.

¹⁹ See 0.3.1 for further discussion.

References to vocal staging can be found in two general types of writings about recorded popular music, firstly in work dealing with production aspects of music, mostly in conjunction with audio recording techniques. While some of these writings sometimes present vocal staging from an aesthetic or sociological perspective (Bennett 1980; Clarke 1983; Hennion 1981; Jones 1987; Julien 1999; Moylan 1992), most occurrences of notions relating to vocal staging are found in the context of description of techniques and of approaches to sound recording (Anderton 1985; Borwick 1990, 1994; Elen 1991, 1994; Kendall 1995a, 1995b; Martin 1983; Nisbeth 1972; Ridder and Beigel 1975; Sillitoe 1999; White 1989). We also find references to vocal staging in writings presenting a historical perspective of audio technology or of rock in general (Cunningham 1996; Escott and Hawkins 1980; Johnson 2000; Jones 1987; Morrison 1996; Shaughnessy 1993; Shea 1990). Finally, several scattered references to vocal staging effects are found in analysis of specific recordings or (musical or artists') styles (Brackett 1991; Burns 1987; Everett 1995, 1999; Hawkins 1992, 1996; Lacasse 1995; Middleton 1993; Moore 1997; Schwarz 1997; Tagg 1991, 1994), and in more general theoretical writings about popular music musicology (Middleton 1990, 1993; Moore 1992b, 1993; Stefani 1987b). There thus seems to be no body of writing which deals specifically with the aesthetic impact of vocal staging in recorded rock music.

Similar observations can be made about studies from other disciplines. In cinema, for example, we find many books and articles including discussions about one or another aspect of vocal staging without specifically dealing with it. It is also not unusual to find the odd reference to vocal staging in either general works on cinema (Bordwell and Thompson 1993; Dick 1990; Martin 1985; Metz 1974) or included in the analysis of specific films (Fisher 1978, 1985; Hanlon 1985; Lang 1984;) or of a specific cinematographer's style (Mintz 1985;

Truppin 1992; Weis 1982, 1985; Williams 1985). Underlying these more specific applications, however, there is quite a large and coherent corpus of theoretical writings dealing specifically with sound in cinema and containing discussions or examples of phenomena relevant to vocal staging (Bailbé 1979; Balazs 1985; Belton 1985; Châteauvert 1991, 1996; Chion 1982; Doane 1980, 1988; Lastra 1992; Metz 1985; Williams 1980; Wood 1984; not to mention Altman 1980-1995). Consequently, I will be referring frequently to these writings. We find a similar general approach to the topic in theoretical writings about forms of expression other than rock music and cinema, and presenting amplified or recorded voice, such as radio (Arnheim 1936; Clancier 1965),²⁰ electroacoustic music (Smalley 1993, 1996; Wendt 1996c; Wishart 1986, 1996), sound poetry (Garnier 1968; Gomringer 1999; Wendt 1996a, 1996b), or, to a certain extent, theatre (Burriss-Meyer 1940, 1941; Burriss-Meyer and Mallory 1950; Burriss-Meyer, Mallory and Goodfriend 1979)²¹. Most of what has been considered relevant in this body of writing is discussed in more detail in chapter 2.

There is also an important body of writing which deals with the notion of ‘acoustic’ vocal staging, i.e. vocal staging done with the help of ‘mechanical’ means: masks, auditoriums, natural locations such as caves, etc. Here again, the topic is approached from a very wide range of disciplines, including palaeontology (Jahn, Devreux and Ibison 1996; Reznikoff 1995; Waller 1993b ; Watson and Keating 1999), archaeology/classics (Anti 1952; Canac 1967; Dingeldein 1910; Hunningger 1956; Wiles 1991), architecture (Blaukopf 1960; Forsyth 1985; Heitz 1963; Portzamparc and Szendy 1994), anthropology/ethnology (Balfour

²⁰ Despite the fact that it was written in 1936, Arnheim’s book, however, is refreshing in that it also explores the practice of audio from an aesthetic point of view, resembling in this way Moylan’s approach. I will therefore also refer frequently to Arnheim (1936).

²¹ Here again, electric sound reproduction is approached from an aesthetic perspective in the context of a given application: what ‘audio’ effects are possible to create in theatre in order to enhance the expressivity of the medium.

1948; Lifschitz 1988; Niles 1989), etc. Many of these writings, among which a number deal specifically with aspects of acoustic vocal staging (especially in the case of palaeontology and anthropology/ethnology), are discussed in chapter 1 and are presented according to a historical perspective. Chapter 1 also discusses a number of references to vocal staging effects found in acoustic music. These references are mostly included in writings about effects of spatialisation in early and modern Western music (Bryant 1981; Carver 1988; Deotte and Szendy 1994; Jullien and Warusfel 1994; Lelong 1994; Mason 1976), but are also found in writings about timbral modification either in classical music (Winsor 1980) or in non-Western music (Balfour 1948; Nattiez 1999; Niles 1989; Schaeffner 1968).

0.3. Theoretical Issues and Problems

0.3.1. Vocal Staging Effects as Technological Musical Parameters

Not only has technology allowed the creation of sound sources which never existed before, such as the heavy metal guitar or the synthesiser—and therefore peculiar to the technology—but it has also provided artists with yet another musical instrument: the recording studio. Since its birth, arguably around 1955, rock music has thus been intimately linked with the development of audio recording technology. First thought of as a means of registering and storing sound, recording techniques gradually became creative tools in their own right, this process changing, in turn, our perception of engineers and producers from the status of ‘technician’ to that of ‘artist’.

The potential of controlling sound in new ways has led to new artistic elements in music, as well as to a redefinition of the musician and of music. [...] A new creative artist has evolved. This person uses the potentials of recording technology as sound resources for the creation (or recreation) of an artistic product. [...] Through its detailed control of sound, the audio recording medium has resources for creative expression that are not possible acoustically. Sounds are created, altered, and combined in ways that are beyond the reality of live, acoustic performance (Moylan 1992: 35).²²

As in electroacoustic music, the recording studio has thus become a place where rock artists and recordists are literally *shaping* sound. This new perspective has given rise to a wide range of aesthetic trends in sound recording that can be easily identified as indicators of particular musical styles.²³

The emergence of recording aesthetics, however, requires that musicologists take into account the new sonic manifestations stemming from the use of technology. Unfortunately, traditional musicology does not prepare the student for the necessity of understanding such manifestations, because ‘The traditional skills emphasize pitch relationships in musical contexts; this comprises a very small part of the sound of audio (Moylan 1992: 153). Richard Middleton (1990: 104-105) expands.

[traditional] musicological methods [...] tend to neglect or have difficulty with parameters which are not easily notated: non-standard pitch [...]; irregular rhythms [...]; not to mention new techniques developed in the recording studio, such as fuzz, wah-wah, phasing and reverberation.

²² See also Jones 1987; Shea 1990.

²³ See section 3.0 for a discussion about the aesthetics of sound recording.

Moylan (1992: 61) then reflects upon the possible artistic impact of these ‘parameters which are not easily notated’.

The ability to perceive pitch is not significantly more refined (if at all) than the abilities to perceive the other parameters of sound, especially those parameters that utilize less calculating pitch-related precepts (timbre, environmental characteristics, texture, textural density). It follows that the artistic elements of sound other than pitch, are equally capable of helping to communicate musical ideas. [...] The artistic elements that were not available, or that were under utilized, in traditional musical contexts are functioning in new ways in modern music productions. The concept that all of the artistic elements of sound have an equal potential to carry the most significant musical information has been called *equivalence*.

It is thus an aspect of that potential ‘equivalent’ expressive power that this study attempts to account for.

Unfortunately, there appears to be no theoretical system within musicology which can help us describe these new ‘artistic elements’.

[...] developing methods for getting at those overlooked dimensions requires not only noticing them, but also constructing a vocabulary and theoretical models with which to refer to them and to differentiate among them. [...] Yet [...] the musicologist who wishes to make sense of this music must come to terms with these uncharted areas for which there is no shared critical apparatus or language [...] (McClary and Walser 1990: 282).²⁴

²⁴ While it is true that some rock music theorists, analysts and historians have taken some of these parameters into account—and sometimes included vocal staging effects—such accounts have usually been without any clear aesthetic or theoretical basis. Moreover, and as will be frequently underlined in the course of this study, the vocabulary used is not only often imprecise, but sometimes bluntly misleading.

In previous research (Lacasse 1995) I have referred to these ‘other parameters’ as ‘technological musical parameters’—which, retrospectively, included vocal staging effects—and proposed a preliminary model mostly derived from Moylan’s (1992) own proposition. Accordingly, most observations made in chapter 5 will follow a more or less ‘adapted’ version of this model (see 5.0.1 and especially Table 5.0-1). As a conclusion to this preliminary study, it was argued that technological parameters should be considered as *musical* parameters in their own right. Accordingly, vocal staging effects should be as aesthetically operative as the other more ‘traditional’ parameters—such as melody, harmony, rhythm, etc.—and should therefore affect listeners as much as any other musical parameter. However, as part of a rather complex structure, vocal staging effects interact with several other elements, most notably with the vocal stream they are associated with. The following paragraphs attempt to outline a general approach to this question of ‘interactive meaning’.

0.3.2. Intramusical Relations and Extramusical Significations

It is not our goal to present a detailed semiotic theoretical model of vocal staging. Such a task would be overambitious in the context of this study (see 6.3.1). However, since we are to probe the potential evocative power of vocal staging, we have to proceed according to a theoretical framework that can help us characterise those effects in recorded rock music. Even though most of our efforts will be directed toward the identification of *connotations* that vocal staging might convey to listeners, it is important to remember, according to Richard Middleton (n.d.: 4), that ‘while the associative sphere of musical meaning, the level of connotation and extramusical reference, is often vastly important, we need to pay more attention than we have so far to the ways in which meaning might be produced at the introversive, what I call the primary, level of signification’. In other words, Middleton (1990:

220-227) makes a distinction between ‘significations’ arising from the internal musical structure—his ‘primary significations’—and, on the other hand, connotations, which he defines as ‘the feelings, associations, evocations and ideas aroused in listeners by songs’ and which he calls ‘secondary significations’ (p. 220). While I acknowledge the relevance of this division, I shall not be using Middleton’s terminology, mainly because it seems to imply some sort of hierarchical importance between internal structure—supposedly ‘primary’—and connotations—supposedly ‘secondary’. Consequently, I will be using the expressions ‘intramusical relations’ when referring to the former, and ‘extramusical significations’ (or ‘connotations’) for the latter.

Following this, it is my contention that vocal staging effects act on both ‘extramusical’ *and* ‘intramusical’ levels at the same time. In the context of this study, however, I will limit my observations to intramusical relations in terms of how vocal staging effects interact with other musical parameters. For example, an echo effect on the voice with, say, a delay time of 500 milliseconds, will definitely have an impact on the overall rhythmic structure of the recording: most generally, the delay time is rhythmically ‘tuned’ in direct proportion with the song’s tempo. It will also give rise to additional intramusical relations, such as emphasising the vocal excerpt (phrase or word) it affects (simply by repeating it).²⁵ As for the level of extramusical significations, and as will be seen in the course of this dissertation, echo might convey a series of connotations, such as providing an impression of some spatial distance, or even arousing such feelings as nostalgia.

²⁵ This leads to the question of relations between lyrics and music which is discussed in the next paragraph.

0.3.3. Text-Music Relationships

As mentioned earlier (0.1.3.2.1), voice in rock music—as in most other genres of vocal music—is not only a matter of words. It is also a set of paralinguistic features, such as the performer’s distinct timbre, the gestural attitude he/she adopts while singing, etc. However, lyrics constitute a good ‘clue’ if one seeks to ‘understand’ what the song is about. Words thus interact both with the lyrics’ denotative meaning and the way they are sung. Similarly, a vocal staging effect can be considered an additional element which interacts with lyrics and the performer’s ‘attitude’. Consequently, special attention will be drawn in the analyses that follow to relationships between music and the lyrics. Lyrics will thus often serve as a guide in our search for possible connotations conveyed by the way the corresponding vocal stream is staged. For example, if the artist sings the line ‘I love you’ while yelling and with a very high level of distortion in the voice, it is likely that potential connotations will be different than if the same words are sung gently close to the microphone, with no additional effect added to the voice.

0.4. Methodology

0.4.1. Empirical v. Hermeneutical Approaches

Besides the historical perspective adopted in the first three chapters, there are two main approaches adopted in this research in order to identify possible connotations conveyed by vocal staging effects in rock recordings. The main one could be described as hermeneutic, for it consists in attempting to find connotations following my own (subjective) analysis of what is heard in rock recordings. A more detailed description of how these analyses are

conducted is presented at the beginning of chapter 5.²⁶ When dealing with examples found in other forms of vocal expression (chapters 1 and 2), I will usually be referring to previous analyses found in relevant secondary sources. In order to partially circumvent the drawbacks of this (subjective) approach, a reception test has been carried out: its methodology is presented in some detail at the beginning of chapter 4. This set of empirical data, however, should not be considered as a definitive answer to our problem. On the contrary, results from the reception test should simply be considered as supplementary information, as additional ‘clues’. I strongly believe, however, that the *combination* of these two types of approach—which are unfortunately often *opposed* rather than combined—can lead us to a better understanding of the potential evocative power of vocal staging in recorded rock music, as well as in other forms of vocal expression.²⁷ Since more specific methodologies are described elsewhere in this dissertation, the following section presents only the general methodological and epistemological considerations, relevant to our topic.

0.4.2. Preliminary Epistemological Considerations

The idea of studying an object such as vocal staging implies a preliminary epistemological position that I will now briefly expose. From the outset, I adopt the axiomatic

²⁶ While some analytic commentaries are found in chapter 3, the accent in this chapter is on the historical perspective. Consequently, analyses found in chapter 3 should be considered as introductory analyses, leading to what will be presented in chapter 5.

²⁷ Philip Tagg’s (1979; 1982; 1985) ‘interobjective’ approach is also interesting in that it aims at circumventing the analyst’s subjectivity. However, Tagg’s (1979: 56) method is conceived for other ends, i.e. ‘to present important circumstantial evidence supporting the hypothesis that there do in fact exist uniform systems of musical code within the realms of popular music [...]’. While I suspect this hypothesis to be true, this study has a different objective: attempting to probe the potential evocative power of a given musical parameter, namely vocal staging. Nevertheless, I will sometimes use a similar approach than the one proposed by Tagg, notably when dealing with phasing effects (5.2.1).

position that an object can exist as such outside of human perception.²⁸ Consequently, for the sake of this study a recording is considered as a fixed object.²⁹ Now, since our aim is mainly to identify connotations that vocal staging might evoke to listeners, we have to take account of a *listening process* involving both the listener and the recording, for while I am ontologically considering a recording a (relatively) fixed object, meanings and connotations it can potentially convey to the listener are anything but fixed.³⁰ I will therefore be generally considering this process in terms of a *relation* between separate entities, i.e. between, on the one hand, individuals—themselves belonging to a given culture—and, on the other, recordings.³¹ Furthermore, this relation, which evolves in time, will be considered as occurring in a given *context*. The following sub-sections present a more detailed description of elements participating in this relational process, a description that is of course adapted to the needs of the present study, and therefore necessarily simplified.

0.4.3. Listening Conditions

0.4.3.1. Listener-Recording Relations

Previous considerations have a direct implication on the kinds of relations we (listeners) establish with a recording. Even though a given recording is considered a fixed object, it is nevertheless obvious that it never can be played back in exactly the same

²⁸ In fact, the position might be more ambiguous. Even though I opt to consider objects as separate entities outside of our perception, I do acknowledge at the same time that this notion might be no more than a creation of my mind. This stance veers towards a more conceptualist stance. However, it is felt that the axiomatic position described here is sufficient in the context of this study.

²⁹ Of course, such objects can deteriorate with time. We are here referring to recordings that are preserved enough to allow reproduction.

³⁰ Allan Moore (1997: 26) writes that popular texts '*afford a range of meanings [...]*'.

³¹ Here, I am refuting the purely idealist position that would state that the existence of a subject is a necessary condition for an external object to exist.

conditions. A number of parameters are associated with these different conditions. one of which concerns the audio reproduction system. Due to the multitude of parts constituting such a system (amplifiers, CD player, speakers; but also wires, plugs, transistors, etc.), it is rare that we encounter two clearly 'identical' audio reproduction systems. Differences between two systems will have a direct impact on the way a given recording will be played back, and therefore perceived. For example, a hi-fi reproduction system with electrostatic speakers will not 'sound' the same—i.e. will not transmit the same 'information'—as a cheap ghetto blaster. Even two 'copies' of a given brand of sound systems will present at least minute differences when playing back the same recording. Moreover, even if it were possible to have two completely identical systems that would play back a recording in *exactly* the same manner, they would still have to be separated in space or in time, leading to different sets of conditions. Here we meet another important parameter: the sonic environment in which a recording is played back. Indeed, this environment will 'colour' the recording's 'sound', mainly through sound reflections. Every room has its own configuration and will thus act differently on the play-back of a given recording. Even when a recording is played twice through the same audio reproduction system in the same basic environment, conditions will vary because of minute changes of atmospheric pressure, temperature, etc.

Listeners themselves, of course, also constitute an essential factor to consider in the analysis of listening situations and conditions. When dealing with more than one listener, it is important to remember that each one of them will perceive a different set of information when listening to the same recording, played back through the same audio system, at the same time and within the same room. These differences are due to the respective spatial location of each individual in the environment. Consequently, each of these individuals is at a different angle and distance from the speakers, an angle and distance which can also vary in time when

individuals are moving. Another important factor is physiological differences between individuals, implying that even if two individuals were to listen to the same recording from the same spatial location at the same time, physiological differences (distance between the two ears; different hearing abilities; etc.) would result in different listening experiences. I am of course not even mentioning other more obvious differences, such as degrees of attention, reactions to external noises, individual taste, and so on. As we know, even when the same individual listens twice to the same recording under the same physical conditions (except temporal ones), the listening experience will vary. To sum up, even though a given recording exists as a distinct entity, there is no way that individuals can listen to exactly the ‘same’ recording. In other words, it is not possible to have identical listening situations.

Notwithstanding all the differences just mentioned, I concur with Rick Altman (1992b: 42) and his opinion:

While not abandoning for a moment the notion that every auditor of the ‘same’ performance actually hears different sounds, we need actively to interrogate the cultural phenomena that permit us to compose sentences, frame ideas, and ultimately communicate about the sounds which are heard.

Following Altman’s reasoning, I will assume that listeners sharing the same broad culture (in our case, culture of the Western world) will also share a given range of possible attitudes toward the same recordings. A good hint that such a shared attitude probably exists is the simple fact that a large number of listeners actually buy the same records. Moreover—and my personal experience bears this out—discussions between listeners tend to show that ‘In spite of the fact that [they] have literally, really heard different sounds, [they] still manage to find a common ground on which to base [their] conversation’ (Altman 1992b: 41). Accordingly, the next sub-section presents a ‘standard’ listening situation that will be assumed here and that

should account for a wide range of situations found in our culture. We are of course aware of limitations of such a ‘standard’ listening situation, but in order to conduct our research, we have to start somewhere.

0.4.3.2. The ‘Standard’ Listening situation

For the purpose of this study we shall assume a ‘standard’ listening situation to be in operation, both in terms of a ‘material’ configuration and of the listener’s attentiveness and social cultural background. First, we will assume a *stereophonic* listening situation. The quality of the stereophonic system might range from very hi-fidelity to relatively lo-fi, just as long as the system can reproduce a satisfactorily wide range of audible frequencies (say, from ≈ 100 Hz to ≈ 12 KHz, which roughly corresponds to FM radio quality), and that the distance between speakers is sufficient for allowing stereophonic effects to be perceived. While not necessarily placed exactly equidistant from the two speakers, the listener’s spatial location should allow him/her to perceive stereophony, at least approximately. Most sound systems found in middle or upper-class homes in the Western world (and elsewhere) would meet these ‘material’ criteria, as well as most sound systems found in cars and other portable systems such as a Discman or Walkman.³² In any event, vocal staging effects analysed in the context of this dissertation have been notably chosen according to a criterion of ‘clear audibility’.

³² Analysed recordings have been listened to either with headphones through a computer, or from a standard home stereophonic system.

There is no way that a study aiming at demonstrating the evocative power of vocal staging would reach its goal by concentrating on effects difficult to perceive.³³

Second, we will imagine a situation in which a listener—or group of listeners—is relatively attentive to the recording they have chosen, an attitude which William Moylan (1992: 69-70) calls ‘active listening’.³⁴ For obvious reasons, if the listener is, say, sleeping while a recording is played back, there is very little chance for any sort of connotation to be evoked—save cases of autosuggestion... Much more problematic is the listener’s sociocultural background, which would include his/her intellectual/physical condition, previous knowledge of the recording or the musical style to which it ‘belongs’, past life experiences, etc. (Moylan 1992: 65-71). All these factors, which are of course of great importance regarding the listener’s expectations toward the recording, are very difficult to take into account. However, this study, which combines empirical and ‘hermeneutical’ approaches (see 0.4.1 above), does not intend to present an exhaustive list of connotations and effects. Rather, it aims at providing a glimpse of the *potential* evocative power of vocal staging.

³³ Another aspect to consider is the fact that engineers working in the studios obviously take into account the wide variety of reproducing systems when building the recording. For example, the vast majority of engineers ‘test’ their final mix through different sets of speakers, ranging from very high quality ones, to ‘shit boxes’ of very low quality. Even monophonic conformity is checked since most television sets are still mono. The whole idea of an effective popular record production is to make most of the musical material noticeable, as uniformly as possible, no matter the reproduction system used, ultimately meeting the audience’s expectations. William Moylan (1992: 70) offers the point of view of the recordist: ‘The *audience* for a piece of music is often considered when predicting the success of the music in communicating its message. The nature of the audience is targeted by defining the knowledge, musical and sociological expectations, and listening experience of the typical audience member. The music conforms to the abilities and expectations of the typical member, to allow the musical message to be successfully communicated and to give the audience a listening experience they might find engaging’.

³⁴ ‘[...] the state of active listening has the listener’s attention aware of the states and activities of the musical or sound materials’ (p. 70).

0.4.4. Notation

Despite its musicological flavour, this dissertation contains no musical examples in the form of traditional notation. Rather, I have chosen to use a different kind of graphic representation developed in earlier work (Lacasse 1995). This type of representation follows Allan Moore's notion of 'sound layers' (1993: 31-32) and is inspired by Moylan's own graphic representation of sound (1992:158-166). This representational system presents sound content (or aspects of the recording's sonic content) with the help of grids and time lines.³⁵ The reason for having chosen such a system is twofold. First, all observations about recordings in this study are made directly from what is actually *heard* on these recordings. The graphic representational system that is used should thus simply be considered as a *marker*. Accordingly, the reader should preferably listen to the recording while studying a particular example. However, the author is aware that it might be difficult, to say the least, to have access to all recordings cited in this study. Consequently, all precautions have been taken to describe as clearly as possible what is to be listened to in the context of the examples presented, so the argumentation can be followed even in the absence of the relevant recording. Furthermore, to use a traditional system of musical notation would have been of very little help since this study deals *precisely* with 'parameters which are not easily notated: [...] specificities (as opposed to abstractions) of timbre; not to mention new techniques developed in the recording studio, such as fuzz, wah-wah, phasing and reverberation' (Middleton 1990: 105).

³⁵ A precise description of the graphic representational system is provided before each occurrence in the dissertation.

The second important reason for having chosen such a system relates to a debate that has raged for some time in popular music studies around what we could call a ‘dialogue of the deaf’. As an interdisciplinary area of study, popular music studies constitute a community of scholars from a wide range of disciplines, such as cultural studies, anthropology/ethnography, communication, and musicology, to mention only the most obvious. Of course, each discipline brings its own set of concepts and approaches, which can often make valuable inter-disciplinary ‘exchanges’ difficult to achieve. I have thus decided to write this dissertation in as clear and accessible a language as possible, so that most scholars interested in popular music could understand it, and ultimately, use it, or criticise it from the perspective of their own discipline. To use an alternative ‘notational’ system is one valid strategy.

0.5. Content

This dissertation is divided into five chapters, excluding this General Introduction and the General Conclusion. Each chapter deals with a particular aspect of vocal staging. Chapter 1 presents an historical overview of *acoustic* vocal staging practices, i.e. of practices independent of electricity. It is shown that vocal staging, far from being a recent practice, probably finds its origins as far back as in prehistoric times. A similar historical approach is adopted in chapter 2, which describes vocal staging practices that have been developed following the advent of electricity. Because of the large amount of information, and because particular emphasis has been placed on the study of rock music in chapters 3 and 5, chapter 2 discusses examples of vocal expression found in other repertoires than recorded rock music. The examples in chapter 2 are drawn from the world of cinema, theatre, radio, sound poetry, etc. Pioneering use of electric vocal staging found in early rock music, such as (1950s) slap

echo and early flanging effects are described in chapter 3. Chapter 4 then presents and discusses results from the reception test. By proceeding in this way, the subsequent analyses in chapter 5 are underpinned, not only empirically by the test results but also by the observations presented in earlier chapters. As described in its introduction, chapter 5 presents two kinds of analyses: one dealing with isolated examples scattered in the recorded rock repertoire, the other presenting an analysis of vocal staging in one specific piece of recorded rock music.

Chapter 1

Historical Survey of Acoustic Vocal Staging

The experience of immersion rather than concentration forms one of the strongest links between modern and medieval man. But we can look back farther still to determine a common origin. Where then is the dark and fluid space from which such listening experiences spring? It is the ocean-womb of our first ancestors: the exaggerated echo and feedback effects of modern electronic and popular music re-create for us the echoing vaults, the dark depths of ocean.

(Schafer 1977: 118)

1.0. Introduction

The staging of voice is neither new, nor specific to Western cultures. This chapter presents an overview of how voice has been sonically staged before the invention of audio recording and electrical amplification. The account will also include a discussion of how, and under what circumstances, such acoustic staging is, and has been, presented in non-Western cultures. Even though Antoni Gryzik (1981; 1984) has already provided a brief survey of ancient and non-Western practices involving acoustic vocal *mise en scène*, I have found it necessary to partly modify the process mainly because most of the examples cited in this chapter have been overlooked by Gryzik.³⁶ It is however not my intention to exhaustively

³⁶ See also 0.2 above for more comments about Gryzik's work.

investigate each and every aspect of the topics encountered in the following sections: long chapters and even whole dissertations could be written about any of these subjects. Rather, the following lines constitute an attempt to assemble scattered data coming from a large number of sources, cutting through a wide range of disciplines.

Apart from this introductory section, the chapter is divided into two main sections. Section 1.1 below deals mostly with practices involving vocal staging in Western culture, while in section 1.2 non-Western practices are examined. Chapters 2 and 3 are then devoted to some pioneering uses of vocal staging in the beginning of the electro-acoustic era (1920s-1960s). We will thus try in the present chapter to dig up some ‘*archetypal* sounds, those mysterious ancient sounds, often possessing felicitous symbolism, which we have inherited from remote antiquity or prehistory’ (Schafer 1977: 9). Indeed, and as John Tosh (1991: 19) has pointed out, ‘It is [...] all too easy to make the [...] error of supposing that a very old and entrenched feature is of relatively recent origin’. This is all the more true when dealing with recent technology, such as audio recording techniques, since ‘the “reality” which each new technology sets out to represent is in large part defined by preexistent representational systems’ (Altman 1992d: 46).³⁷ As we shall see, many of the artifices constructed in the recording studio find their origins in a wide range of earlier practices.

³⁷ Rick Altman adds elsewhere that ‘The challenge of the history of representation [...] is in the task of identifying the return of one repressed representational system in another, and thus in observing the unceasing pressure to which media subject each other. [...] To write the history of representational technologies is thus to trace the dialectic which grows out of the confrontation between representational and reality codes’ (Altman 1984: 124).

1.1. Practices in Western Cultures³⁸

1.1.1. Prehistory

1.1.1.1. Upper Palaeolithic

1.1.1.1.1. Resonance, Echo and Reverberation³⁹

Vocal staging can be traced back as far as prehistoric times, when our ancestors were apparently trying to either impress their companions, hear the voices of spirits, or attain some state of trance, notably during rituals happening in caves or other shelters: ‘Primitive man was fascinated by the special acoustic properties of the caves he inhabited. [...] One imagines sacred rites being performed in these dark reverberant spaces’ (Schafer 1977: 217).

Recent research suggests that the ‘special acoustic properties’ evoked by Schafer were indeed important for our ancestors.⁴⁰ For example, in their inquiry about the Palaeolithic ‘world of sound’, Iégor Reznikoff (1995: 541-542) and Michel Dauvois have analysed ‘the sound quality of prehistoric caves which those decorating them during the upper Palaeolithic period could have apprehended and *used*.’ Reznikoff continues: ‘the study has considered the link between, on the one hand, the location chosen for the rock paintings, and on the other, the acoustics of the caves, and more particularly the points with greatest resonance’. The

³⁸ Some of the practices described in this section are not, strictly speaking, part of Western culture; however, the cultures to which they belonged have influenced our own present culture in one way or another. Section 1.2 below deals with vocal staging in unequivocally non-Western cultures.

³⁹ Distinction between echo and reverberation is discussed in detail in 3.1.1.1 below. For the moment, suffice it to say that reverberation is perceived as the *prolongation* of the original sound, and echo as the *repetition* of it. As for resonance, the effect is perceived as an *amplification* of particular frequencies of the original sound (usually accompanied by some prolongation effect).

⁴⁰ The first thought about the importance of the sound dimension of caves in relation with rock art might be found in Giedion 1962: 526-528. He notably writes that ‘It might be that the intangibility so prevalent in paleolithic art is a product of its relation to audible space. The figurations in the caverns appear and disappear from one moment to the next. Their aspect is dynamic, not static. Like sounds, they come and go’ (p. 528).

points of resonance in question have been located using the voice as a sound source. First, they have observed that ‘Most pictures are located in, or in immediate proximity to, resonant places’. Second, ‘Most ideal resonant places are locations for pictures [...]. Among the ideal resonant places, the best are always decorated or at least marked’. Finally, ‘Certain signs are explicable only in relation to sound’ (pp. 546-547). This last statement needs further explanation:

[...] some signs were rediscovered aurally: by advancing in total darkness through the cave and presuming that a sign would be found in a particularly resonant place, locating the latter, switching on a light, and indeed finding such a sign, even in a place unsuited for paintings (p. 547).

Such observations have been corroborated by Steven Waller (among others), who has analysed data from at least one hundred rock art sites in Western Europe, Australia and North America (Dayton 1992; Waller 1993a; 1993b). For example, ‘In deep caves such as Lascaux and Pont-de-Gaume in France, echoes in painted chambers produce levels of between 23 and 31 decibels. [...] In contrast, surfaces without paint are “totally flat”’ (Dayton 1992). It should be clear at this point that some vocal staging has occurred in prehistory (along with staging of other sounds); but there is more.

1.1.1.1.2. Prehistoric Shamanism and the Use of Sound

Palaeontologists Jean Clottes and David Lewis-Williams (1996) argue that most of the activities conducted in prehistoric caves were of a shamanic nature. The caves would have constituted an ideal location to communicate with subterranean animal spirits. Furthermore, the shamanic perspective proposed by the two scholars can apparently explain most of the paintings and marks found in prehistoric caves (especially from the upper Palaeolithic).

According to this theory, rather than representing some hunting scenery, most drawings would reproduce visions and hallucinations as experienced by shamans who would have attained different stages of trance. Such altered states of consciousness were (and are still) obtained by various methods such as extended fasting, exposure to high temperatures, privation of sleep, intense suffering, ingestion of psychotropic substances,⁴¹ and, of course, use of repetitive sounds, mostly with the assistance of a drum (Achterberg 1991: 143-154; Clottes and Lewis-Williams 1996: 13-14; Vazeilles 1991: 12-13).⁴²

⁴¹ As the reader might expect, we shall come back to psychotropic drugs later in the study when dealing with examples taken from psychedelic rock (chapter 5, especially section 5.2.1.1).

⁴² In a personal letter (May 1st 1999), Jean Clottes explains that sound indeed plays a major role in shamanic rituals: 'Dans beaucoup de cultures qui pratiquent ce type de religion, le symbole du chaman est le tambour. En effet, un des moyens favoris pour entrer en transe (c'est-à-dire voyager dans le monde des esprits) est l'utilisation de sons répétés et monotones'. Achterberg (1991: 150) also states that 'une stimulation monotone, répétitive, de n'importe quel sens modifie le centre de la conscience. Chez les chamans, les sons habituels servant de stimulus proviennent du tambour, de baguettes, de crécelles, ou d'autres instruments à percussions'. It is also possible that resonance may have played a role in the amplification of low frequencies emitted by drums. For example—and even though we are encroaching on the next sub-section (1.1.1.2.2)—here are some of the conclusions from research conducted on Neolithic structures (such as Newgrange in Ireland and Maes Howe in Orkney): 'The resonant properties of a number of tombs have now been modelled [...]. The results suggest that these places may have resonated at frequencies which are too low to be heard by human beings. It is possible, however, that this resonance may have been perceived as a feeling rather than a noise, similar to the sensation of standing near large bass speakers. [...] Interestingly, acoustic physics suggests that these low frequencies could best have been initiated by performing rhythmical drumming in the chamber, with the speed of the beat relating to the size of the tomb' (Watson 1997). It has to be posited that only a few of these Neolithic structures present low frequency resonance; as the reader will see in section 1.1.1.2, a majority of these constructions resonate at frequencies close to the human voice. See also Watson and Keating 1999.

Several ‘primitive’ societies still include shamanism in their rituals that usually feature some sort of singing or chanting.⁴³ Consequently, and as Reznikoff (1995: 542) concludes, if ‘In so-called primitive societies in particular (North American and Amazonian Indians, nomadic African and Australian hunters, Siberian hunters) every rite is recited and sung [...], we may [then] suppose that the tribes who painted the caves recited or chanted [...] during processions or rites in these caves’. It becomes difficult, then, not to think of the sound dimension of caves as an integral part of such rituals. Resonance, reverberation and echo might have played an important role in such circumstances. Reznikoff (1995: 545) provides us with an example of how particular sounds might have been vocally produced in caves and what effects it might have provoked:

For example, the use of the voice, and even just of breath and the body’s vibrations when exhaling, can, in a recess, create a cranial vibration. The choice of vowels is relatively unimportant; the sound *o* can be used, but in general [...] the sound *mm* with the mouth closed (or the accentuated *hm*) is sufficient in the right place to make up to 100 m of the cave resound. [...] To carry out or even to witness this sort of work is most impressive, and it is quite an exceptional experience to hear the cave respond to a sound made in front of an animal on the cave wall.

⁴³ Gerald Weiss (1973: 44) describes chants by Campa shamans this way: ‘There is a distinctive quality to the singing of a Campa shaman under the influence of *kamárampi*, an eerie, distant quality of voice. His jaw may quiver, he may cause his clothing to vibrate’. There is also this very intriguing quote linking the sound of the voice and the absorption of psychotropic substances: ‘Ingestion of *Stropharia cubensis*, on a number of separate occasions, showed it to be [...] very nearly ideal for easy manifestation of the interior cerebral tone. We speculated that the tone is directly caused by the metabolism of the tryptamines within the cerebral matrix, and might be the electron spin resonance of the metabolizing tryptamine molecules within the nervous system, somehow amplified to audible levels [?!]. We discovered that it was possible to closely imitate these tones with the voice, by sounding harmonic tones that quickly adjusted to the interior sounds as they moved from the audible into the ultrasonic range. Using this knowledge, it was possible to produce a vocal sound that seemed to amplify the harmonic tones perceivable inside the cranium. The vocal production of the sounds seems to rest on specific effects of the tryptamines on the motor nerves, particularly those governing the facial and vocal muscles. As with *ayahuasca*, an interior sound is commonly heard, which quite often triggers a spontaneous burst of imitative vocalizations, markedly unlike any conventional human speech or facial contortions’ (McKenna and McKenna 1975: 88). It is also argued that some shamans are able to orientate most of one’s hallucinations through singing or whistling (Narby 1995: 13-16). Of course, there are a very large number of other descriptions of the use of sound, and especially chanting and singing, in the literature about shamans; but to go through them would bring us too much out of the scope of this study. However, it is worth mentioning here that a parallel could be made between these ‘interior tones’ and the Beatles’ ‘Tomorrow Never Knows’ (1966) in which we are supposed to hear sounds typical of an LSD trip; we shall come back to this song later (5.2.1.1).

Waller also argues that ‘prehistoric rock art, which is usually found in echoing locations such as caves and canyons, was produced in response to the echoes, since legends from many ancient cultures describe the belief that echoes were spirit voices’ (Lubman 1998).⁴⁴ This again supports the opinion that vocal staging was used in ritualistic contexts in prehistoric times.

1.1.1.1.3. Finland and Echo

There is a collection of lakes in Finland around which a number of prehistoric painted rocks have been found, this time in the open air. These places are also characterised by the presence of echo. Reznikoff (1995: 551), again, has tried to find a correlation between the location of these painted rocks and the amplitude of echo.⁴⁵

Here again the voice was used from d^2 to d^3 , actually with an open air powerful singing technique (100-110 dB at the source), in order to obtain at a given point, in front of a picture and facing the lake, a good echo effect. [...] The criterion for a *good sound location* was the *existence of at least a triple echo*: a double echo is not a rare phenomenon, and four echoes would be too restrictive a condition.

⁴⁴ For example, there is an old North American Indian tale about a chief entering the house of the dead chief Echo. There, he hears strange voices that can read his mind (Thompson 1929: 148-149). For additional comments on Echo and Narcissus, as well as on other mythic figures, see 5.3.1.0.

⁴⁵ The researchers have studied four lakes in Finland: Nuuksionjärvi (The *Swan lake*), Valkoinen-järvi (*White lake*), Juusjärvi, and Yövesi lake. The first three lakes are in the area of Helsinki, while the fourth one is located near Mikkeli.

Again the results are quite clear: ‘we can conclude [...] that painting locations are sound (echo) locations’ (Reznikoff 1995: 552).⁴⁶ Steven Waller (1993b) draws similar conclusions from his observations.

It seems thus reasonable to state at this point that some vocal staging was deliberately created and used in ritualistic contexts (probably mostly shamanic) as early as the upper Palaeolithic. As we will see in the next sub-section (1.1.1.2), there is evidence suggesting that other uses of echo, resonance, reverberation, and other acoustic effects have been part of similar rituals during the Neolithic period as well.

1.1.1.2. Neolithic

1.1.1.2.0. Introduction

In his historical survey about the *mise en scène* of sound, Antony Gryzik (1984: 11-12) mentions invisible aural dramas composed of strange reverberations that have taken place in the temples of a number of ancient civilisations.⁴⁷ Aaron Watson and David Keating (1999: 335-336) expand:

⁴⁶ Elsewhere, in a study about the *kalevala*, Reznikoff (1987b: 257) evokes the beauty of echo and its impact on ‘deep consciousness’, an expression related to shamanism (Orphism) and states of trance: ‘The Earth, hills, shores of lakes, forests,... do sound and answer to singing by resonance and echo: this effect was used traditionally very often in mountains but also by boatmen along river banks. The impression can be extraordinary and sounds really magic, it is indeed a marvel: because only pure intervals are left, though very subtle, the echo of an echo can be very powerful on deep consciousness. This was currently practiced in ancient Finnish tradition [...]’. The *kalevala* is a two thousand year old form of Finnish epic poem which has been orally transmitted. See *The Kalevala: The Finnish National Epic*, <http://virtual.finland.fi/finfo/english/kaleva.html>. (Visited 30 May 1999).

⁴⁷ It has to be mentioned that Gryzik is in fact quoting Georges-Emmanuel Clancier (1965: 306-307).

Prehistoric monuments may not have been as peaceful as they are today. While these sites can be interpreted as a means by which people in the past structured space to emphasize their social order, studies [...] suggest that some of these places were also ideal environments for producing dramatic sound effects. While it cannot be demonstrated that the architecture of monuments was deliberately configured to enhance acoustic performance, the behaviour of sound would have been an unavoidable factor in their use. [...] These places may not have been simply a technology for producing visual and acoustic experiences, but a means of creating different worlds altogether.

The following sub-sections describe some of these sound effects as observed in a number of Neolithic monuments found notably in Malta, Britain and Ireland.

1.1.1.2.1. Malta

Among the monuments presenting particular acoustic properties, we find the famous Hypogeum of Hal Saflieni (Malta) built around 3500 BC, and within which there is the Oracle Room:

[...] a voice speaking in it resonates throughout the vaults; this is where the oracle directives were spoken. The presence of similar apertures with the same acoustical properties in the side chambers at several other temples in Malta demonstrates that some form of communication with the spiritual world [...] was part of Maltese ritual.⁴⁸

Murray Schafer (1977: 217-218) provides more technical details about the sonic characteristics displayed by that room.

⁴⁸ http://www.psychicinvestigator.com/pise/demo/Del_Txt.htm. (Visited 31 May 1999).

In one wall there is a largish cavity at eye level, shaped like a big Helmholtz resonator, with a resonance frequency of about 90 hertz. If a man speaks there slowly in a deep voice, the low-frequency components of his speech will be considerably amplified and a deep, ringing sound will fill not only the oracle chamber itself, but also the circumjacent rooms with an awe-inspiring sound.⁴⁹

Such vocal staging practices were probably aiming to impress those consulting the oracles, as if the augurs were directly dictated by the gods and spirits. Furthermore, a resonant sound seems to come from nowhere or *everywhere* at the same time; its location is diffuse. This sonic ubiquity has certainly accentuated the mysterious quality of the spoken omens uttered by the priest who might have in turn exploited as much as possible this natural acoustic situation.

1.1.1.2.2. Megaliths in the United Kingdom and Ireland

The preceding descriptions, along with those provided in section 1.1.1.1 above correspond to results from recent research about the acoustic properties of Megalithic structures found in Britain and Ireland. In one study, it has been hypothesised that ‘these ancient structures possessed resonant acoustical properties that may have contributed to their functional purpose’ (Jahn, Devereux and Ibison 1996: 657).⁵⁰ After some empirical measurements, researchers have come to the following conclusions:

⁴⁹ See also Schaeffner 1980: 91, note 2. It is also possible to visit *The Hal Saflieni Hypogeum Website* at <http://www.magnet.mt/home/museums/>. (Visited 21 August 1999).

⁵⁰ Sites studied in this research are, in the United Kingdom: Wayland’s Smithy, Berkshire; Chun Quoit, Cornwall; Cairn Euny, Cornwall; in Ireland: Cairn L and Cairn I, Carnbane West, Loughcrew; Newgrange, County Meath. All these structures have been built around 3500 BC, except for Cairn Euny (around 400 BC).

[...] by whatever course of design and construction, all six of the diverse configurations visited sustain clearly discernible acoustical resonances in the vicinity of 110 Hz, well within the male voice range. [...] In a few cases, it appears that interior standing stones may have been positioned to enhance such resonances, by suppressing unwanted azimuthal modes. At some sites, a number of the rock art drawings bear striking similarities to the plan or longitudinal patterns of these standing-wave configurations (pp. 657-658).

Similarly, researchers Aaron Watson and David Keating (1999) have studied two locations with striking acoustic effects. For example, the interior tomb of the Camster-Round monument ‘was found to have a significant influence upon the behaviour of sound’ (p. 328). More precisely, ‘Sounds generated by the occupants of the tomb [are] enhanced by echoes, while those listening to these sounds from the outside will only hear a filtered rendition emerge through the cairn’ (p. 329). Furthermore, standing-waves (resonance) appear at certain frequencies, an effect that can be easily produced with the voice as a sound source. The presence of standing-waves is accompanied by a range of effects on the listener. One of these effects concerns the location of the sound source, which becomes unclear since ‘sound appear[s] to issue from different directions around the chamber.’⁵¹ Listeners [can] occasionally [perceive] these sounds to be contained within their heads, which could be unpleasant’ (p. 330). Another important effect deals with the alteration of the vocal timbre: ‘Speech within the chamber [can] become seriously distorted, resulting in some extraordinary harmonics’ (p. 330). Watson and Keating conclude:

⁵¹ Which is similar to the effect occurring in the Hypogeum of Hal Saflieni discussed in section 1.1.1.2.1 above.

Such effects may have been a significant contribution to the experience of participation [...] inside megalithic tombs, where darkness, the presence of the dead and sound effects may have combined to create a memorable experience. [...] This may have heightened a sense of mystery regarding the unseen activities within the tomb and empowered those who were able to produce such marked transformations of sound when in the presence of the dead (p. 335).

Again, it seems reasonable to argue that our ancestors were deliberately exploiting (and perhaps designing) places bearing particular acoustic properties for particular ritualistic, or even political purposes. Not surprisingly, it is the human voice that seems to have been mainly *mise en scène* (staged).⁵² Following the example of prehistory, a large number of similar vocal staging practices have taken place during the remainder of history, and notably in antiquity.

1.1.2. Antiquity

1.1.2.0. Introduction

As in the preceding section, it is not possible to give an exhaustive account of practices involving acoustic staging of the voice during antiquity. In what follows we shall therefore be discussing examples illustrating how vocal *mise en scène* might have been used in such ‘high’ cultures as those of Greece, Rome and Egypt.

⁵² As discussed in section 1.2 above, similar effects are sought after in some non-Western communities.

1.1.2.1. Greek and Roman Theatre

1.1.2.1.0. Introduction

Ancient theatre provides many examples of vocal staging practices whose aesthetics were part of a larger ideology. For the Greeks, plays were to be heard and seen by everyone attending them. This ‘democratic’ approach led to architectural designs which are still admired today for their acoustic quality. But it has also given rise to a number of codes and principles that are relevant to this study, as we shall see in the following sub-sections.

1.1.2.1.1. Space and Acoustics

1.1.2.1.1.1. The Stage

The spatial configuration of the Greek stage was quite different from the present day. The actors (usually three) performed on top of a shallow wall, called the *logeion*, that was placed in the very back of the stage area.⁵³ The *orchêstra*, consisting of a large circle, was between the seating and the *logeion*, so that ‘Actors and audience were separated [...] by a vast empty space’ (Wiles 1991: 36).⁵⁴ Because of the distance and the shallow stage, the Greek audience had the impression ‘of looking at a carving in relief’ (p. 36). Greek theatre therefore had a two-dimensional configuration.⁵⁵ Other than leading to obvious spatial limitations for the actors, this configuration also had an ideological aspect: it was

⁵³ The *logeion* was about 3-4 metres high by 2,5 metres deep and 20 metres wide.

⁵⁴ Despite the stage’s height, spectators sitting in the front rows of the auditorium were able to see the action because of the distance between their seats and the stage (about 10,5 metres). Spectators seating in the last rows were at about 75 metres from the stage. This is quite astonishing when one knows that in most European opera houses the distance from the curtain to the farthest seats is about 30-35 metres (Hunningher 1956: 2). Moreover, the size of the audience was about 15000 to 17000 people. There are even Roman theatres that held 40000 to 80000 spectators (Amiel 1931: 16; Wiles 1991: 133).

⁵⁵ Furthermore, Wiles (1991: 37) writes that ‘The stage action was like a mirror in the way it created a flat two-dimensional image. [...] The world of the play is contiguous with the normal world of the audience, but at the same time inhabits a separate architectural structure’ which corresponds, in some ways, to stereophonic impressions.

‘democratic’ in the sense that the vast majority of the spectators were able to see (and hear) everything occurring on the *logeion* quite adequately.⁵⁶

If the long, shallow stage has found few imitators in recent centuries, this is perhaps because of its essentially democratic quality. All actors are equidistant from the audience. Just as there is no hierarchy amongst the audience, so there is none amongst the *dramatis personae*. The deep-set illusionist stages which prevailed from the seventeenth to the nineteenth centuries, and on into the modern London West End, have tended to differentiate lead actors who occupy the foreground, from supporting actors who fill the background (Wiles 1991: 65).⁵⁷

As we shall shortly see (1.1.2.1.4), Roman theatre came closer the ‘deep-set illusionist stages’ in question. However, before we deal with this in greater detail, it is necessary to discuss some of the ancient Greek notions of acoustics.

1.1.2.1.1.2. Acoustics

Greek auditoriums are renowned for their good acoustics. A combination of several elements is responsible for such a high sound quality (Anti 1952; Bieber 1961; Canac 1967; Hunningher 1956; Wiles 1991; and others).⁵⁸ One of these elements is the use of the *orchestra* as a reflecting surface:

⁵⁶ What was less democratic, though, was the fact that not everyone was allowed to attend the theatre, such as slaves and most women (Wiles 1991: 15-16).

⁵⁷ It has to be said, though, that other conventions were used to differentiate leading actors from secondary actors; see section 1.1.2.1.2 below. We shall come back to this democratic issue in section 3.2.2.1 when discussing Philip Tagg’s ‘Monocentric panning’.

⁵⁸ It has also to be mentioned that inverted urns (preferably of bronze) were arranged in the theatre in order to increase the volume of the voice by resonance; see Wiles 1991: 222; Amiel 1931: 24; Vitruvius V.iv-v.

In the Greek theatre, the actor's voice was to a large extent reflected off the beaten earth floor of the *orchêstra*. From this floor, the voice rises in circular waves to the audience seated around it in the auditorium. This type of reflected sound is called by Vitruvius 'consonant' [...]: 'Consonant places are those in which the voice, with the assistance of the ground, increases as it rises, and is distinct when it reaches the ear, making the words clear' (Wiles 1991: 38-39).⁵⁹

Apart from this reflective quality, the *orchêstra* was also the space inhabited by the chorus in which they occasionally danced and sang.⁶⁰ Interestingly enough, sound emitted from the *orchêstra* itself reverberated, an effect considered inappropriate for speech but suitable for music. This type of sound was called 'resonant' (Hunningher 1956: 10; Wiles 1991: 38-39) in opposition to the 'consonant' sound just described. As we shall see in 5.1.1.2.1 below, while a non-reverberating voice is obviously more intelligible, it is quite interesting that Greeks associated reverberation with musical effects (euphony).

1.1.2.1.2. Sound Level

Partly because of the two-dimensional configuration displayed by the *logeion*, and also because actors were wearing masks (see 1.1.2.1.5 below), a number of conventions had to be followed in order to help the audience identify the stage characters correctly. Besides a set of visual conventions,⁶¹ the three actors also had to follow a set of acoustic conventions. For example, higher or lower vocal pitch was related to the character's emotions (Biehle 1930: 23; Wiles 1991: 119, 219); also, actors delivered their lines at different sound levels. Indeed,

⁵⁹ Wiles quotes Vitruvius V.viii. 1-2.

⁶⁰ Of course, for the actor's voice to be reflected, the *orchêstra* had to be left empty; consequently, the chorus occupied the *orchêstra* only during interludes. See Amiel 1931: 19.

⁶¹ For a description of some of the visual conventions, see Wiles 1991: 43; 51-52.

the two secondary actors had to speak more softly in order to let the principal actor (*protagonistês*) dominate (Amiel 1931: 24; Gryzik 1981: 14). As shown in the section 1.1.2.1.4 below, things were different in Roman theatre.

1.1.2.1.3. Horizontal Positioning

A very interesting convention in Hellenistic theatre is the ascription of particular meaning in relation to the left/right stage axis. Indeed, there were three doorways on the stage:

The central door [...] serves as (a) the palace, or (b) a cave, or (c) an important house, or (d) whatever is (appropriate to) the main actor of the drama; the right is occupied (d) by the second actor; the left is (d) for the most unimportant mask, or might be (b) an abandoned shrine or (c) an unused house (Wiles 1991: 43).

The right and left sides were also used to illustrate a number of binary oppositions, 'between rich and poor, town and country, male and female, helper and opponent' (Wiles 1991: 45).

André Schaeffner (1965: 39-40) adds the inside/outside dichotomy to this list which brings out both social tensions and moral oppositions (good and bad), both of which were at the core of Greek society.⁶²

⁶² More precisely, Schaeffner writes that 'Dans sa célèbre étude sur la polarité religieuse, Robert Hertz n'a pas songé, en parlant du « servage de la gauche », à inclure l'exemple du théâtre grec; il eût retrouvé dans la mise en scène antique une symbolique, appuyée sur la topographie, où la droite équivaut au « dedans » et à la paix, la gauche au « dehors » et à la constante menace. L'iconostase de l'église orthodoxe russe a conservé les trois portes, la royale par où entre le prêtre, les latérales par où le diacre sort; une étude approfondie du rituel montrerait peut-être entre gauche et droite quelques vestiges de la division antique. C'est par la porte de gauche que les pécheurs étaient expulsés de l'Église. Richard Wagner s'en est souvenu, puisque dans *Parsifal* il fait entrer par la droite le cortège des Chevaliers et par la gauche Amfortas, le roi pécheur; durant tout le dernier acte *Parsifal*, au terme de ses épreuves, viendra de la droite, suivi même de Kundry qui, au premier acte, magicienne ou plutôt sorcière chevauchant une « jument d'enfer », avait surgi de la gauche'. Schaeffner must refer to 'Prééminence de la main droite' found in Hertz 1928. For its part, Paul Zumthor (1993: 21) adds that 'l'Antiquité gréco-latine valorisa surtout la latéralité (gauche contre droite); le Moyen Âge, l'élévation et la profondeur. Cependant, à l'est se lève l'astre du jour, signifiant le triomphe de la vie : les églises médiévales, en y exposant leur chevet, ne faisaient que prolonger la tradition des temples grecs. L'ouest, c'est le déclin et la chute; le nord,

1.1.2.1.4. *The Roman Stage*

Romans, who had a different vision of the world, have modified and adapted the Greeks' version accordingly, which has led to other innovations. Their society was more hierarchical, and their adaptation of Greek staging reflected this ideological choice. Indeed, Vitruvius gives the following guidelines for the conception of a Roman stage:

Thus the platform will be made wider than that of the Greeks because [in Rome] the artists all play their parts on stage, while the orchestra is used for the seating of senators. The height of the platform is not to be more than five feet so that those who are seated in the orchestra can see the movements of all actors [...] (cited in Wiles 1991: 36).

This configuration corresponds to a three-dimensional representational space, allowing a number of artifices not possible with the Greek's two-dimensional stage.

The [Greek] shallow stage sets up a relationship of distance between actor and audience. There is no such thing, therefore, as an 'aside' [...]. I mean by that, there is no scene in which an actor talking to another standing beside him abruptly changes direction and targets a remark at the audience (Wiles 1991: 52).

On the other hand,

The lowness of the Roman stage and proximity of the audience allow for an *asiding* technique. [...] On the Roman stage, unlike the Greek, actor A can place himself physically closer to the audience than he is to actors B and C. He can thus function as an extension of the audience's consciousness, or as an *alter ego* of the poet, whilst B and C, under the eyes of the stage commentator, seem to inhabit a play world within a play world (Wiles 1991: 59).⁶³

les ténèbres, la guerre et la mort. Dans plusieurs cultures (ainsi, chez les anciens Chinois, les Turcs, bien des peuples nomades), ce symbolisme englobe les oppositions entre mâle et femelle, faste et néfaste, blanc et noir, et détermine, par des règles complexes, la disposition de la maison ou de la tente'.

⁶³ See 2.3.1.3.2 for comments on *asiding* in cinema, and section 5.1.3.2.3 for an example of an *aside* in recorded rock music.

Of course, such a configuration becomes 'discriminatory': spectators seated in the front (especially senators in the *orchestra*) are privileged. This situation will prevail in the future, and will reach its height in the middle of the 17th Century, notably in Italy.

From a central platform, and surrounded by his courtiers, the prince enjoys the show in the exact perspective axis. At the time, the whole scenography was designed in function of the prince, and the scenery's conjuring was only perfect in his eyes, the image dislocating itself outside the privileged axis (Leclerc 1965: 595).⁶⁴

1.1.2.1.5. Masks and Shields

A discussion about ancient theatre would not be complete without some reference to masks. We find two divergent opinions about the acoustic role of the mask in ancient theatre. Some authors have argued that masks altered the actor's voice (Amiel 1931: 24; Gryzik 1984: 16; Ihde 1976: 170; Schaeffner 1968: 90-91;)⁶⁵ while others have claimed that they have not

⁶⁴ 'D'une estrade centrale, entouré de ses courtisans, le prince jouira du spectacle dans l'axe exact de la perspective. Toute la scénographie de cette époque était conçue en fonction du prince, l'illusionnisme du décor n'atteignait sa perfection qu'à ses yeux, l'image se disloquant hors de l'axe privilégié'. Leclerc (1965: 617) mentions an exception to this: 'Une innovation précoce suscitée par le désir de donner à toutes les places une égale visibilité, fut appliquée, en 1640, par l'architecte Andrea Seghizzi au théâtre Formigliari de Bologne. La solution consistait à disposer les loges en saillie les unes sur les autres, en allant de la scène vers le fond de la salle, le décrochement général donnait au contour de la salle un profil de dents de scie. La multiplicité des ressauts ne pouvait que nuire à l'acoustique'.

⁶⁵ For example, Don Ihde (1976: 170) writes that 'With the ancient Greeks theater remained quasi religious. Here the voice of the actor emerged from the mask, or *per-sona*. Not only was the individual human face masked or transformed and set aside from the ordinary in a stylized form, but the voice was also masked, transformed, becoming the voice of a god or a dramatic hero'. In the same vein, Roland Barthes (1965: 531) has said about the Greek mask that '[...] il dépayse; d'abord en censurant la mobilité du visage, nuances, sourires, larmes, sans la remplacer par aucun signe, même général; puis en altérant la voix, rendue profonde, caverneuse, étrange, comme venue d'un autre monde : mélange d'inhumanité et d'humanité emphatique, il est alors une fonction capitale de l'illusion tragique, dont la mission est de donner à lire la communication des dieux et des hommes'.

(Biehle 1930: 27-28; Dingeldein 1910; Hunningher 1956: 320).⁶⁶ David Wiles explains that ‘The mistake of the older authorities was to think of the mouth as a megaphone rather than the headpiece as a resonator’.⁶⁷ In other words, masks were amplifying the voice more than transforming it, and as previously stated (see 1.1.2.1.2 above), it was the tone of the voice, more than anything else, that was responsible for the expression of the character’s emotive state.⁶⁸

Consequently, one should be careful with descriptions by contemporaries who seem to assert that voices were altered by theatre masks. For example, Lucian of Samosata writes that when an actor ‘starts to speak under his mask, he brings out a voice that is sometimes very high sometimes very low, but always quite unnatural’ (quoted in Schaeffner 1968: 90).⁶⁹ Once read carefully, this description might simply mean that the actor starts to alter his voice by himself, once he has put on the mask. As a matter of fact, similar self-transformation of the actor’s voice exists in other cultures, such as in Vietnam. Of course, and as already mentioned, the Greek mask may have added some resonance to the voice, but it seems most

⁶⁶ André Schaeffner (1968: 90-91) provides an account of the question prior to the 1970s: ‘Depuis plusieurs siècles deux opinions s’opposent au sujet du rôle acoustique du masque; Otto Dingeldein [1910], qui nie ce rôle, a résumé dans un écrit documenté les théories touchant à la question : *Haben die Theatermasken der Alten die Stimme verstärkt?* Récemment M. Herbert Biehle [1930], tout en souscrivant aux conclusions de Dingeldein sur l’inefficacité acoustique des masques eux-mêmes, n’en rappelle pas moins qu’à certains de ceux-ci, masques d’hommes ou de vieillards, était joint un porte-voix [...]. Les textes des écrivains latins Aulu-Gelle et Cassiodore souvent cités, mais serrés de plus près par [Antoine] Mongez [(1747-1835)] dans son *Mémoire sur les masques des Anciens*, semblent bien fortifier l’idée d’une transmission peu naturelle de la voix : dans l’expression *concavis repercussionibus roborata*, les concavités dont Cassiodore remarque l’action amplificatrice ne peuvent être que celles du masque entier et non d’une bouche grande ouverte, dont rien ne nous dit qu’elle était disposée en pavillon de porte-voix; de son côté, Aulu-Gelle considère le masque comme une sorte de couvercle (*cooperimentum*) rabattant et concentrant la voix, qui, selon Cassiodore, ne paraissait pas sortir de la bouche d’un homme [...].’

⁶⁷ Personal email (8 June 1999).

⁶⁸ Interestingly enough, Antoine Hennion writes that in today’s popular music ‘La « voix » ne doit pas se comprendre [...] comme technique vocale, ou maîtrise systématique de ses capacités. Elle est plutôt l’indice d’une personnalité’ (Hennion 1981: 45).

⁶⁹ ‘[Quand il] vient à parler sous son masque, il en fait sortir une voix tantôt fort haute et tantôt fort basse, mais toujours peu naturelle’.

probable that it was the actor who was truly responsible for the typical voice-sound. On the other hand, it is unquestionable that, in other cultures, masks have been designed in order to alter the voice timbre. For example, it is the case for the Kwakiutl of British Columbia (Canada), a Native American culture whose masks have been built notably to transform the wearer's voice (Zumthor 1983: 198), but we are now encroaching on section 1.2.

In another connection, ancient German warriors used their shields almost like acoustic masks, apparently in order to create reverberation effects, a practice reported by Tacitus (55-120):

They have also those songs of theirs, by the recital of which ('baritus', they call it), they rouse their courage, while from the note they augur the result of the approaching conflict. For, as their line shouts, they inspire or feel alarm. It is not so much an articulate sound, as a general cry of valour. They aim chiefly at a harsh note and a confused roar, putting their shields to their mouth, so that, by reverberation, it may swell into a fuller and deeper sound (Tacitus 1942: 710).⁷⁰

1.1.2.2. Egyptian and Mayan Temples

Even though no specific research has been conducted on the use of sound effects by Egyptians during their rituals, it is nevertheless probable that some vocal staging practices did occur in Egyptian temples.⁷¹ For example, Jacqueline Pegg (1997b: [9]) mentions that 'the voice/sound was often focused towards the required direction by the use of a hand held around the mouth presumably in order that the words reach their correct goal'. But other clues suggest that acoustics could have been important in Egyptian rituals.

⁷⁰ See also Schaeffner 1968: 25; 90-91.

⁷¹ However some authors have studied the use of voice and music in Egyptian pyramids and temples. See Hickman 1956; Manniche 1975; Pegg 1997a, 1997b.

[...] just go to the tomb of Ramose in the Valley of the Nobles, west bank of Luxor and the acoustics there are amazing. The same can be said for Old Kingdom pyramids, especially in those areas of the pyramids covered with pyramid texts which were spells recited by priests in order to help the soul of the deceased king rise to heaven. Unfortunately, as far as I am aware, nothing has been done on this subject—but I feel that the use and effects of sound were well known to the Egyptians and used by them.⁷²

Similar effects might also have been used in Mayan temples (Clancier 1965: 307).⁷³ But again, it is not possible to go through every vocal staging practices of antiquity. We shall now go on and examine other practices within Western sacred and secular musical culture.

⁷² Excerpt from an email kindly sent by Jacqueline Pegg, (received on 21 May 1999). Some of these possible effects are evoked in Jerzy Kawalerowicz's movie *Pharao* (1966). See also Gryzik 1981: 12-13.

⁷³ Although not directly related to voice, David Lubman (1998) has proposed an interesting theory about the echo effect heard at a Mayan pyramid: 'Handclaps evoke chirped echoes from the staircases of the Pyramid of Kukulcan at Chichen Itza. The physics of the chirped echo can be explained quite simply as periodic reflections from step faces. But until now, no one has bothered to do so. What is very interesting is that the chirped echo sounds arguably like the primary call of the Mayan sacred bird, the resplendent Quetzal. This magnificent bird, now near extinction, has for thousands of years represented the "spirit of the Maya". Spirits, in many traditions, speak in echoes. Think of the legend of Echo and Narcissus in the western tradition. Echo, lacking a body, was pure spirit'. We shall come back to this last point in details in 5.3.1. See also <http://www.eden.com/~tomzap/sounds.html>. (Visited 31 May 1999).

1.1.3. Western Acoustic Music

1.1.3.1. Sacred Music: Churches and Cathedrals

1.1.3.1.1. Reverberation and Resonance

Don Ihde (1976: 50-51) has expressed quite well the feeling one encounters when entering a gothic cathedral:

I walk into the Cathedral of Notre Dame in Paris for the first time. Its emptiness and high arching dark interior are awesome, but it bespeaks a certain monumentality. It is a ghostly reminder of a civilization long past, its muted walls echoing only the shuffle of countless tourist feet. Later I return, and a high mass is being sung: suddenly the mute walls echo and re-echo and the singing fills the cathedral. Its soul has momentarily returned, and the mute testimony of the past has once again returned to live in the moment of the ritual. Here the paired 'regions' of sight and sound 'synthesize' in dramatic richness.⁷⁴

According to Murray Schafer (1977: 53), this reinforcement of voice (and other instruments, like the organ) through reverberation was 'designed to make the deity listen'. But it certainly had a strong effect on listeners as well:

⁷⁴ Paul Zumthor (1993: 100-101) describes a similar feeling when he writes that 'Pour le croyant qui pénètre sous sa voûte, l'espace se démultiplie, éclate en univers discontinus que pourtant conjoint l'unité physique de l'édifice, englobante et comme introvertie. L'espace de l'église est un espace interne, féminisé en quelque façon car il contient Dieu comme le fit le sein de la Vierge Mère. [...] Espace sonore, aussi, le sanctuaire résonne de la musique liturgique, les voix chorales s'y amplifient unanimement'.

The long reverberation time of the low frequencies and absorption of high frequencies produce a certain mental attitude, such as was demanded of the faithful by the church of the middle-ages [...]. The sound in Norman and Gothic churches, surrounding the audience, strengthens the link between the individual and the community. The loss of high frequencies and the resulting impossibility of localising the sound make the believer part of a world of sound. He does not face the sound in 'enjoyment'—he is wrapped up by it (Blaukopf 1960: 179-180).⁷⁵

The priest's voice also reverberated, which probably helped in giving him a supernatural aura since 'Reverberation [...] give[s] the illusion of permanence to sounds and also the impression of acoustic authority'. Furthermore, 'The reverberation of the Gothic church (up to 6-8 seconds) also slowed down speech, turning it into monumental rhetoric' (Schafer 1977:

⁷⁵ Murray Schafer (1977: 117-118) draws a parallel between this listening situation and today's living room stereo set, where 'the listener finds himself at the center of the sound; he is massaged by it, flooded by it. Such listening conditions are those of a classless society, a society seeking unification and integrity. It is by no means a new impulse to seek this kind of sound space, and in fact it was once beautifully achieved in the singing of Gregorian chants in the cathedrals of the Middle Ages. The stone walls and floors of Norman and Gothic cathedrals produced not only an abnormally long reverberation time (six seconds or more) but also reflected sounds of low and medium frequencies as well, discriminating against high frequencies above 2,000 hertz owing to the greater absorption of the walls and air in that range. Anyone who has heard monks chanting plainsong in one of these old buildings will never forget the effect: the voices seem to issue from no point but suffuse the building like perfume'. See also Bailblé 1978: 59, note 23.

219).⁷⁶ Indeed, ‘the world of sound, while it has life, does lack permanence, whereas “the word of our God stands forever”’ (Ong 1967: 161).⁷⁷

The long reverberation heard in churches and cathedrals also had direct effects on the music itself. By prolonging the sound, reverberation acted as a kind of sonic binder, linking the previous note to the next one, and often producing overlapping. Some authors even argue that such overlapping caused by reverberation opened the way to ‘the polyphonic potential of the enclosed forms of Romanesque and Gothic cathedrals’, converting ‘the sequential tones of melody into the simultaneously heard chords of harmony’ (Schafer 1977: 219). Michael Forsyth (1985: 3) goes further:

⁷⁶ Apart from reverberation, many other features helped the priests in displaying some authority. For example, the use of the Latin language which was not understood by most of the congregation, not to mention the fact that the celebrant was usually speaking in front of the altar, turning his back to the community. Moreover, virtually all the senses were addressed during such rituals: hearing (music, voice, reverberation, etc.); smell (incense); sight (low lights, stained-glass windows, artistic representations, etc.); taste (communion). Think also of the effect produced by the vertiginous space inside the cathedral: ‘The employment of spatial form, the special province of the right hemisphere, plays a large role in esoteric psychology. Often a room or an entire structure will be built in order to affect that mode of consciousness directly in a certain manner. One surviving example is the Alhambra, the Moorish palace in Spain. It is intended to have an effect that is spatial, experiential, and difficult to encompass linearly. More familiarly, we can note the perceptual effects of Gothic cathedrals and churches, and of certain rooms whose structural pattern produces an effect on us’ (Ornstein 1977: 140). Don Ihde (1976: 177) expands on hearing and sight: ‘In liturgical voice there are echoes of the ancient past. [...] But the ultimate otherness of liturgical voice is the echo of the gods. [...] More subtly, the very experience of the God of the biblical traditions is an experience of word in voice such that the person of God is “like” an intense auditory experience. The Western God of Word gradually became known as an omnipresent but invisible God. [...] But omnipresent, invisible presence is presence of sound in its most dramatic moments. The liturgist fills the synagogue with sounding voice. And in the classical religious experience of Isaiah in the Temple, vision is obscured as the temple is filled with the smoke of the offering, but the voice of God presents itself in the very midst of the visual obscurity. The God of voice surrounds, penetrates, and fills the worshipper’. For a discussion about the importance of physical senses in ancient Egypt rituals, see Pegg 1997a: 14-18.

⁷⁷ Ong is quoting the Bible (Isa. 40: 8).

From early times the acoustics of stone buildings have surely influenced the development of Western music, as in Romanesque churches, where the successive notes of plainchant melody reverberate and linger in the lofty enclosure, becoming superimposed to produce the idea of harmony. Western musical tradition was thus not only *melodic* but *harmonic*, even before the notion grew, around A.D. 1000, of enriching the sound by singing more than one melody at once and producing the harmony at source.⁷⁸

Resonance might also have had a considerable influence on performance practice within these large rooms, notably by suggesting suitable keys according to the resonant frequencies. As a matter of fact, some performers today take this parameter into account: ‘One concert singer carried all his songs in three keys, tested the hall before the concert and used the key in which the song was most effectively projected by exploiting the resonant characteristics of the house’ (Burriss-Meyer, Mallory and Goodfriend 1979: 13). One could even argue that it would have been pointless to provide keys for Gregorian chants since the sacred buildings in which they were to be performed would have prescribed them through their resonant frequencies. As exposed in the next sub-section, reverberation and resonance was not the only architectural feature exploited by musicians—so was spatialisation.

⁷⁸ Relying on the work of Wallace Clement Sabine, Forsyth (1985: 3) argues that ‘room acoustics have such an influence on musical composition and performance that the architectural traditions of different races, and hence the acoustic characteristics of their building, influenced fundamentally the type of music that they developed. Whether the music of a region developed as predominantly melodic or rhythmic depends on whether the race of people were historically “housed or unhoused, dwelling in reed huts or in tents, in houses of wood or stone, in houses and temples high vaulted or low roofed, of heavy furnishings or light”’. Forsyth is quoting Sabine 1922: 114. Blaukopf (1960: 180) adds that ‘architecture produces by its acoustics a certain musical sound which serves towards the sociological internalisation of the standards followed also by the architecture’. For further discussion about the impact of reverberation on Gregorian chant and organum, see also Blaukopf 1960: 178-179.

1.1.3.1.2. Spatialisation

Even though, generally speaking, ‘The spatial properties of sound have traditionally not been used in musical contexts’ (Moylan 1992: 47), we can still find examples of vocal spatialisation in our music tradition.⁷⁹ The most obvious one is of course the practice of *cori spezzati* (divided choirs), a specific case of polychoral music, mostly (but not exclusively) associated with the Church of St. Mark’s, Venice, and deriving mostly from older styles of antiphony (such as early psalmody).⁸⁰

[...] the polychoral style is usually reckoned to have developed out of the exploitation by composers attached to St. Mark’s of the architectural features of the building. This begins with the practice of *cori spezzati* [...] which refers to the use of divided choirs in the singing of psalmody right back to the Middle Ages. The practice of antiphonally separating the two halves of each line of the psalm was developed by composers such as Adrian Willeart [c.1490-1562], Cipriano de Rore [c.1515-1565], and Gioseffo Zarlino [1517-1590] who may have relied on spatial placement of choirs in the *San Marco* to achieve antiphonal effects, not just in plainchant, but [also] in polyphonic music (Perry 1999).

⁷⁹ Guy Lelong (1994: 33) explains why music spatialisation might not have been exploited that much: ‘Le dispositif du concert traditionnel sépare le public des musiciens, auxquels un espace particulier est réservé : la scène. Or cette division, parce qu’elle place les auditeurs face aux interprètes, a surtout pour effet d’annihiler la composante spatiale du son, que la musique pourtant est tout à fait capable d’exploiter. Bref, le modèle suivi par la majorité des lieux de spectacle « cadre » assurément notre écoute, puisqu’il est, en dernier ressort, responsable de l’« immobilisme » instrumental auquel la musique est généralement contrainte’. On the other hand, Paul Zumthor (1993: 408) argues that space and acoustics were quite important for medieval musicians: ‘[...] les artistes témoignaient d’un juste souci d’acoustique dans l’organisation des performances : ainsi, l’emplacement des chanteurs de *répons* dans le chœur ou la nef était déterminé par le timbre de leur voix (comme il l’est dans la liturgie byzantine et slave); un drame liturgique était chanté sous le porche de l’église qui répercutait les voix vers le public assemblé sur place. Mais aussi, les recherches des musiciens se succédèrent, en France et en Allemagne surtout, depuis le IXe siècle, visant à diversifier et amplifier le volume sonore : elles aboutirent, vers 1200, à la création d’une polyphonie dont l’espace complexe et subtil s’épanouit sous les voûtes d’églises gothiques toutes neuves’.

⁸⁰ In his book about sacred polychoral music, Anthony Carver (1988: xvi) offers the following definition: ‘[...] a polychoral work or passage is one in which the ensemble is consistently split into two or more groups, each retaining its own identity, which sing separately and together within through-composed framework in which antiphony is a fundamental compositional resource [...]’. See also, among others, Arnold 1980; Bryant 1981; Mason 1976; O’Regan 1995.

Apart from the names just mentioned, the idea of distributing singers (or instrumentalists) in space has been well exploited by other Italian composers, such as Andrea and Giovanni Gabrieli (c.1510-1586; c.1557-1612), Giovanni Bassano (c.1558-1617), and Claudio Monteverdi (1567-1643). Among other European composers we find Thomas Tallis (c.1504-1585) in Britain, and Heinrich Schütz (1585-1672) in Germany. Some well-known composers have also written sections of their pieces using the same technique, including Johann Sebastian Bach (1685-1750), and later Hector Berlioz (1803-1869).⁸¹ The origins of such practice can be traced back as far as the chorus in Greek tragedy, in early Jewish liturgical music, or when Christian and Orthodox churches used to separate women (or boys) from men in the Middle Ages (Arnold 1980: 776; Xenakis and Szendy 1994: 109-110). In the words of Roger Reynolds (1978: 180), the effect on listeners was then ‘often rousing and curiously unsettling’. Of course, such practices have also been used by more recent composers (Boulez and Stockhausen for example), but the goal of this section is to propose an overview of *older* practices foreshadowing what can be heard in today’s recorded music.⁸²

⁸¹ Emmanuel Nunes (1994: 126) writes that ‘Ce genre de spatialisation est sans doute le plus ancien de notre histoire musicale, soit comme « géographie fonctionnelle » et hiérarchisation sonore de cérémonies et services religieux, soit en tant que démarche plus spécifiquement acoustique [...]. Notons enfin que l’on connaissait déjà à l’époque l’immense importance, et du degré de superposition (durée de simultanéité) de deux chœurs « successifs », et de la vitesse de leur alternance’. Jullien and Warusfel (1994: 69) adds that ‘Nombreux sont les exemples musicaux, en particulier au XXe siècle, dont la lecture ou la volonté dramatique reposent sur une organisation spatiale de l’effectif instrumental, au point de la spécifier sur la partition. Sans spéculer sur les évolutions historiques et avatars d’un tel paramètre compositionnel, on peut cependant observer que la proximité entre certains instruments est déterminante pour que se produisent des phénomènes de fusion spectrale ou harmonique. Inversement, l’écoute contrapuntique est facilitée par la séparation spatiale des sources de même que par le choix des tessitures ou des instruments’.

⁸² As a matter of fact, Anthony Carver (1988: ix) writes that ‘With the continuing interest of contemporary composers in the compositional possibilities of space and acceptance of stereophony as the norm in the reproduction of music, it seems an appropriate time to celebrate one of the glories of the late Renaissance and early Baroque music—the polychoral style’.

1.1.3.2. Secular Music: Opera and Court Music

1.1.3.2.1. Offstage Effects

Spatial distribution of vocalists is not, however, restricted to sacred music. Anyone having attended opera is aware of some offstage vocal effects. For example, there is the ‘humming chorus’ which is performed offstage in Puccini’s *Madama Butterfly*; or in Mozart’s *Die Zauberflöte* when the chorus is asked to sing *sotto voce* in the wings. There is also an offstage chorus in Verdi’s *La traviata*, which sings a *mardi gras* parade song about the slaughter of the fatted ox. In that same opera, Alfredo sings ‘Di quell’ amor’ offstage. In Puccini’s *La Bohème*, Parpignol’s ‘Ecco i giocatelli di Parpignol’ is first sung offstage, then repeated (slightly varied) onstage. Also, Basilio’s entrance, in the first act of Mozart’s *Le Nozze di Figaro*, is preceded by him singing offstage ‘La Madama e sara...’.⁸³ Apart from these examples, and countless others found in the opera repertoire, there are occurrences of similar effects in theatre. Just one famous example would be in Shakespeare’s *Hamlet*, when the actor playing the Ghost is asked to speak from under the stage (Act I, Scene V).⁸⁴ Most of the time, these effects aim to provide dramatic impact, enhancing the whole *mise en scène* and, by the same token, hopefully clarifying the message or emotion being (or hoped to be) conveyed.

⁸³ Many thanks to Jonathan G. Pearl and Ronnie Anter for pointing out most of these examples to me

⁸⁴ See also 2.2 below.

1.1.3.2.2. *Timbre Alteration*

1.1.3.2.2.1. Megaphone

Before the advent of electrical sound reinforcement, the megaphone was often used to amplify a speaker's or a singer's voice. But the device also altered the vocal timbre, adding 'strangeness' to it (Schaeffner 1968: 25). This is probably why in *Siegfried* (1871), for example, Wagner asks the singer performing the dragon Fafner to sing through a large megaphone.⁸⁵ More recently, some 'jazz' singers from the 1920s and 1930s were well-known for their utilisation of the megaphone. The best example is probably Rudy Vallée who was even pictured with the device (see Appendix 1; Lewis and Sherman 1931). In the words of Charlie Gillett (1996: 5), 'The megaphone produced a curious deadpan and emotionless manner of expression, which was to form the basis of the "crooning" style that developed after microphones and electrical amplification were introduced'.⁸⁶ When sound recording was becoming more widespread, the megaphone sound was so peculiar that some artists even had their voice recorded through it in order to preserve their distinctive sound quality.⁸⁷

1.1.3.2.2.2. Mirliton

The mirliton (or kazoo) is another device that has been used in musical contexts. Even though the mirliton is nowadays generally considered a toy, it has been included in more or less 'serious' musical performances during the 16th and 17th Centuries (Balfour 1948: 63). As

⁸⁵ 'Durch ein starkes Sprachrohr' (Wagner 1871: 512).

⁸⁶ See 2.0.2 below for a discussion about the microphone and crooning.

⁸⁷ We can still hear voices through megaphones in recent recordings. For example, in 'This Song for You' (1975) and 'Summer Rain' (1977), Chris De Burgh has apparently used a megaphone like Vallée's in order to get a similar effect. Also, during the skiffle craze in the UK in the 1950s, some bands, such as The Temperance Seven (with 'Whispering' Paul McDowell on vocals), were singing jazz numbers using a megaphone to imitate the sound of the 1920s.

a matter of fact, in France, Germany, Italy and other European countries, mirlitons were hidden, so to speak, within some musical instruments:

These instruments were [...] merely ‘dummy’ instruments, whose shapes simulated various types of flutes and other wind instruments, but whose function was to modify sounds produced vocally, through the medium of a fine membrane (e.g. the thin skin of an onion, very thin parchment, gold-beaters’ skin, etc.) which covered one orifice and was protected by a covering-cap of wood. Another hole, usually at the side, was sung or hummed into, and the vibrations of the membrane imparted a nasal quality to the vocal tones. The effect of four or five voices in concert, even when their *timbres* was thus metamorphosed, may have been fairly attractive, and, at any rate, must have proved quaint and amusing [...] (Balfour 1948: 63-64).⁸⁸

One of these instruments was the *flûte eunuque* (or *flûte à l’oignon*), which was often heard in the French court of the 16th and 17th Centuries. At about the same period, other similar instruments were present in Germany, Italy and other European countries (Balfour 1948: 63-66). As described in the next section, mirlitons, as well as other instruments and techniques aimed at altering the human voice, have been widely used in more serious contexts in non-Western cultures.

⁸⁸ Balfour mentions also the use of mirlitons in ‘jazz bands’ (p. 65).

1.2. Practices in Non-Western Cultures

1.2.0. Introduction

Even though some vocal staging practices occurring in non-Western cultures exploit aspects of spatialisation, resonance, and reverberation, most of them deal primarily with the alteration of the vocal timbre. Indeed, there are numerous instances of voice-disguising practices in non-Western cultures that have been reported mainly by musicologists and ethnomusicologists (Balfour 1948; Lifschitz 1988; Niles 1989; Schaeffner 1968). It is not the goal of this section to provide an exhaustive account of such practices. Rather, the following lines aim simply at giving an overview of them. Interestingly, such alteration practices occur very often in ritualistic contexts. Edward Lifschitz (1988: 226) argues that voice alteration is a ‘widespread and probably very ancient technique for creating a spirit presence’. The resulting altered sound, then, ‘seems always to have reference to ultimate powers and their relationship to human activities’.

Voice alteration is produced through a number of techniques, but ‘A typical characteristic of voice disguises is the creation of a secondary sound which accompanies the primary sound source [namely the voice]’ (Lifschitz 1988: 225). Lifschitz identifies three main techniques used to alter the vocal timbre in non-Western cultures. First and most commonly, instruments that add a ‘buzzing’ sound to the voice, such as the mirliton; secondly, resonators, which can simply consist in ‘a simple long tube [that] adds a significant reverberating and volume-increasing effect to that primary sound source’ (p. 225); finally, his third category includes self-distorted vocal sounds, made without direct use of an external instrument (p. 222). It is thus according to this categorisation that we will now examine some non-Western voice-disguising practices.

1.2.1. Mirlitons

Lifschitz (1988: 221) proposes the following description of the mirliton found in non-Western cultures, mostly in Africa:

[...] in its simplest form [the mirliton consists of] a tube open at one end and closed at the other by a thin, flexible membrane which is set in motion—that is, made to vibrate creating a buzzing tone—when sound is created in the tube by someone speaking or singing. The tube may be made of a great variety of materials ranging from wood to hollow bird bones and other kind of bones, grass reeds, gourd, animal horn or even cast metal, and the vibrating membrane may be made of lizard skin [or] bat's wing [...]. The material most frequently used throughout Africa, however, is the membrane of a spider's egg sac.

Balfour (1948: 45) adds that 'Their function is merely to alter the quality of the normal sounds emitted and to impart to these an abnormal *timbre*'.⁸⁹ In the areas where the use of the instrument has been observed in Africa, the altered voice generally represents (or once represented) spirit voices. Usually, the sound is either personifying dead people, ancestral spirits, gods, ghosts, etc.⁹⁰

Balfour (1948: 54-55) gives the following account of an interesting (but somewhat morbid) use of mirlitons during funeral rites by the Tiv tribe (Nigeria).

⁸⁹ Interestingly, Balfour (1948: 46) makes the following comparison: 'The quality of the resultant tones may best be described by comparing them with the peculiar intonation imparted to Punch's vocal efforts in a Punch and Judy show'. Balfour, of course, refers to the traditional British puppet show. One can hear an excerpt of Punch's voice at the following link, <http://myweb.mortimer.com/~bstad/punch.wav>. (Visited 19 July 1999). It is amusing to note that further in his article, Balfour (p. 49) mentions the use of mirlitons during an African puppet show (Ibibio tribe, Nigeria): 'The jointed marionettes are caused to perform by concealed persons, who also do the talking, though the uninitiated believe that the figures are actually speaking'.

⁹⁰ In some cases, however, disguised-voices are used for different (but still important) purposes. For example, some tribes throughout West and Central Africa use mirlitons to 'render judicial decisions and hand down sentences including the ultimate, death penalties [sic]' (Lifschitz 1988: 223). Such practice could exist in order to provide authority to the judge uttering the sentence and/or to depersonalise his judgement.

On the death of an elder honoured as one who was able to avert evil and bring prosperity to his people [...] it was the custom to place the body in a coffin cut out of a soft wood tree, in the bottom of which small holes were bored, to lay this on a trestle of crossed poles about three feet from the ground in his compound, and allow it to dehydrate. [...] When the bones alone remained, the skull was removed and kept in a specially constructed bin, called *Por*, by the family elder who was next in precedence to the deceased. [...] In many cases these skulls were fitted with elaborately carved thigh bones of the same elder, with voice holes and the end covered with a vibrating membrane. [...] These are never exposed to the public gaze but are carried by the family group elder in certain important rites that always take place at night. It seems that only one of this kind of voice-disguiser can exist in a family group, whose elder at times holds a feast called *Biamegh*.

It is interesting to note that in most cases where mystical values are still attached to a disguised voice-sound, women, children, or uninitiated are usually not allowed to witness manifestations during which voice-disguisers are used. One other important detail is worth mentioning. Indeed, it might happen that mirlitons are used in conjunction with masks. Actually, almost every mask altering the voice includes a form of mirliton. However, Lifschitz (1988: 222) points out that 'In contrast to visual masking forms, which are necessarily concerned with display and with being seen, acoustic masks [i.e. disguised-voices with little or none visual masking] most often appear at night and are associated with highly sacred and arcane activities of men's societies'. In other words, the sense of hearing is of capital importance, which again denotes the gap between such cultures and our present one, which is (unfortunately) highly resorting to the sense of sight. On the other hand, Balfour (1948: 60) reminds us of the following:

As a serious appliance, for use in the ritual of secret societies and as a means of simulating spirit voices, associated largely with ancestral cults, [the buzzing membrane] still seems to be widely diffused; but the tendency for the instrument to degenerate into a mere plaything and to lose its ceremonial significance is very noticeable, and in many areas it has become a toy shorn of all mystery.⁹¹

Other forms of mirliton have been observed elsewhere in the world. For example, in Java and in the Solomon Islands (Balfour 1948: 62-63); but also in India where many instances have been found, such as the *guguchu*, a 'small pyramid-shaped hollow earthen instrument', and whose membrane is, quite surprisingly, also made of spider's egg sac (p. 61). Another peculiar Indian instrument combines a vibrating membrane with resonance. The voice-disguising instrument, which looks like a trumpet, is described as follows by Balfour (p. 62):

Over the hole in the mouthpiece is fixed a delicate membrane (again derived from the egg-cyst of a spider), which is caused to vibrate by sound-waves produced vocally by the performer. But the special and unique feature of the *nyástaranga* is the fact that [...] the mouth is not applied to the *embouchure*. Instead, the 'mouthpiece' is pressed against the player's neck, externally against the larynx. [...] The membrane picks up the vibrations and causes a change in the *timbre* of the notes, which are reinforced by the hollow tube acting as a reverberator, and are of a clear, reedy quality. Usually the instrument is used in pairs, one pressed on either side of the neck of the performer.

⁹¹ Nowadays, in our so-called 'advanced' Western countries, one might wish to exploit such 'mysteriousness', notably by using an *electronic* voice-disguiser: 'Here's just some of the things you can do with our new palm-sized novelty voice changer: fool your friends, confuse your enemies, be your own secretary, make anonymous calls for business or security reasons, or protect women and children home alone. [...] Slip it from your pocket and place it over any phone's mouth piece! Miniature electronics alter your voice through three mechanical toned scales, high to low' (advertising found at <http://dnbentepprisesinc.site.yahoo.net/dnbentepprisesinc/shirpocmicvo.html>, visited 16 July 1999). It is quite unsettling to find out that children and especially women, still need man's ('advanced' technological!) help for their security and survival...

Even though such instruments are not used during rituals, it is quite intriguing that the materials they are made of and their functioning are similar to African mirlitons.

1.2.2. Resonators

1.2.2.1. Papua New-Guinea and Nigeria

Perhaps even more intriguing is the fact that some resonating instruments, functioning as voice-disguisers without the help of a ‘buzzing’ membrane, have been used elsewhere in the world in the context of rituals. Moreover, the progress of some of these rituals, and the rules governing them are very similar (if not identical) to the ones observed in Africa in which mirlitons were used. This is notably the case in Papua New Guinea, an area widely separated from Africa.⁹² Ethnomusicologist Don Niles (1989: 77) summarises:

[In Papua New Guinea] voice-modifiers are traditionally intended to transform a human voice into a non-human one. All reports show that their utilisation, as well as the knowledge attached to them, is men’s privilege. Generally, these instruments are an integral part of the ceremonial gear during a masculine cult for which men must be specially initiated; the instruments are also kept away from the sight of women and uninitiated. Most of the time, voice-modifiers are used to produce spirit voices.⁹³

Coming back to Africa, some Nigerian entertainers have been reported to use their accompanying drum as a voice-disguiser by inverting the instrument and speaking or singing

⁹² It must be mentioned, however, that some 16th Century Spanish explorers (such as Ortiz de Retez) found general similarities between Black Africans and the native population of Papua New Guinea, which could suggest some sort of ancient communication between the two communities.

⁹³ ‘[...] les altérateurs de voix sont traditionnellement destinés à transformer une voix d’homme en une voix non humaine. Toutes les sources indiquent que leur utilisation (de même que le savoir qui s’y rapporte) est l’apanage des hommes; ces instruments font généralement partie intégrante de l’attirail cérémoniel d’un culte masculin auquel les hommes doivent être spécialement initiés, et ils sont gardés à l’abri du regard des femmes et des non-initiés. D’une manière générale, les altérateurs de voix servent à produire la voix des esprits [...]’.

into the lower open end (Balfour 1948: 52). In this connection, it is interesting to quote Francis Bacon from his *Sylva sylvarum* (1661) who seems to have been impressed by the possible resonating effect of voices sung into inverted drums:

[...] if you sung into the hole of a drum, it maketh the singing more sweet. And so I conceive it would, if it were a song in parts sung into several drums; and for handsomeness and strangeness sake, it would not be amiss to have a curtain between the place where the drums are and the hearers (cited in Winsor 1980: 293).

Other means of modifying the vocal sound through resonators include ceramic pots, coconuts, conchs, etc. (Lifschitz 1988: 221; Niles 1989). As presented in the next sub-section, other practices even use devices found in the kitchen.

1.2.2.2. Circumpolar Throat-Singing

Close to the North Pole, a number of cultures practice a type of throat-singing which includes ‘inhaled and exhaled sounds’ heard within a combination of ‘two strings of homogenous [vocal] sounds: one string of low sounds (the so-called throat-sounds) and a string of higher sounds’ (Nattiez 1999: 401). The Inuit’s *katajjait* (north Canada), the Ainu’s *Rekutkar* (northern Japan), and the Chukchi’s *Pič Eynen* (Siberia) are examples of that type of singing: the three sound quite similar yet each bear different meanings depending on the culture.⁹⁴ Usually, such throat songs (or throat games) are performed by two (or sometimes more) women placed in front of each other. Such performance is intriguing and can sound quite foreign to our ears. As a matter of fact, it took a long time for ethnomusicologists to understand how these ‘strange’ sounds were actually produced. To add to the difficulty, in the

⁹⁴ However, it seems that these ‘songs’ were originally all part of shamanic rituals (Nattiez 1999: 405, 413-414).

case of the Inuit, one goal of the performance is 'to give the feeling of a perfect cohesion: people from the audience should not be able to discover who is doing what' (Nattiez 1999: 403).

The search for this sonic cohesion is supported by a number of techniques, and this is where it touches our subject. Usually, both women stand very close together, almost singing in one another's mouth. In the case of Ainu women, each performer puts her hands around the mouth; then, both women bring each other's hands together, forming a kind of tube through which they sing. According to Jean-Jacques Nattiez (1999: 407), 'Most probably the way they use their hands serves the acoustical purpose of blending the sounds of the two partners into a single sound'. Similarly and most interestingly, 'The Inuit women of the Caribou area use a kitchen basin into which they stick their heads in order to get a similar effect of fusion and resonance'. This last example illustrates how ways of altering one's voice can be diversified! Regardless of the utilisation of the 'blending' techniques described above, circumpolar throat-singing can also be thought of as a self-distortion technique in itself because of the unusual vocal sounds that are produced. To that effect, the next section presents a number of examples of techniques involving self-distortion of the voice.

1.2.3. Self-Distortion of the Voice⁹⁵

1.2.3.1. Guttural Sounds

Of course, it is possible to modify one's voice without the help of an instrument, notably by producing vocal sounds that could be generally described as guttural. Lifschitz (1988: 222) writes that in Africa, vocal sounds aiming to produce spirit voices and using such techniques 'are most often described in ethnographic reporting as guttural, croaky, gruff, hollow-sounding or animal-like'.⁹⁶ Since 'The maintenance of a guttural-sounding voice is said to require skill and a naturally powerful voice', some rely on the aid of substances in order to produce the desired sound. For example, 'Among the Egbado Yoruba, quantities of overripe banana and raw palm oil are swallowed, and the masked performer (an *Engungun*) carries a bottle of the oil with him, swallowing from time to time to keep his voice rough'.

1.2.3.2. Multiphonic Singing

1.2.3.2.1. Central Asia

Another important form of self-distorted vocalisation which can also sound sometimes guttural is multiphonic singing (also known as harmonic chanting, throat singing, etc.).⁹⁷ Among the numerous styles of multiphonic singing we find the *khoomei* from Central Asia (mainly Tuva and Western Mongolia), which is characterised by the emission of two or three sounds performed simultaneously by a single singer. The effect is produced by chanting on

⁹⁵ Although self-distorted voice-sound is not, strictly speaking, part of the subject covered by this dissertation, some self-distortion techniques are so peculiar, and in many ways still related to our subject, that it is felt they deserve a brief description.

⁹⁶ As a matter of fact, most sounds produced in circumpolar throat-singing (1.2.2.2 above) aim precisely at imitating some animal sounds in the context of shamanic rituals (Nattiez 1999: 405, 407-408, 409). See also note ⁹⁴

⁹⁷ Not to be mixed up with the kind of throat singing described in section 1.2.2.2 above.

one note (fundamental) and selectively amplifying the partials (overtones or harmonics) by changing the shape of the resonant cavities of the mouth, larynx and pharynx.⁹⁸

The solo two/three-voice singing emerges thanks to the simultaneous sounding of the fundamental which has a guttural timbre colouring and its upper overtones which are caught and amplified by the head resonator. For all this the fundamental performs the function of the bass pedal and the upper subsounds also carefully draw a crystal pure melody on natural overtones in a high register. Sometimes a special additional subsound joins the lower sound. In such cases this produces the effect of the solo three-voice singing. [...] In every-day life the throat singing songs are usually performed while a herder, watching a flock of sheep, is having a rest, the throat-singing in the mountains can be heard far away. According to a singer he is sending greetings with his song to his people who are staying in a yurt far away from the pasture (*Pesni I Instrumental'ie Melodii Tuvi* 1969).

Apart from Tuvans and Mongolians, some Tibetan Monks also practice multiphonic singing during rituals. Actually, rituals involving multiphonic chanting are very sacred and usually secret.

1.2.3.2.2. North America

Although multiphonic singing is usually associated with Central Asia, there is an interesting and intriguing case of early throat singing in America. Indeed, country singer Arthur Miles (1929) recorded a song in 1929 in which he performed throat singing. Oddly enough, this is the very first recording of multiphonic singing!⁹⁹ Indeed, because of the U.S.S.R. political situation at the time, no recording of harmonic chant from their territories

⁹⁸ See <http://www.overtonechanting.com/overtone.htm>. (Visited 24 July 1999).

⁹⁹ Thanks to Bernard Dubreuil for pointing this out to me.

had been done (or rendered public) before the recording by Miles. Invaluable information has been sent to me by P.V. Conte about Arthur Miles that is worth a complete citation:

[Arthur Miles] was a cowboy yodeller recorded by a Victor field unit stationed in Dallas Texas on August 8th, 1929. The titles 'Lonely Cowboy' parts 1 & 2 represent his total output. Miles has the distinction as being one of the 3 or 4 (and certainly the best) country-based harmonic singers and remains an enigma to this day. It has been suggested that there might be a connection to certain Amerindian tribal techniques, but no continuum could be established from recognized similarities to Northwestern/Northern Aboriginal examples. Miles is unusual for his nearly effortless delivery of a style the Tuvans call *sygyyt*—and doubly unusual as his fundamental tone is an octave above what the Tuvans would consider standard. This higher octave would necessitate more tight air pressure and a strain to control the harmonics, yet Miles has overcome this obstacle in a very natural and crystal-clear delivery which comes across as easy as a whistle. It is not a far stretch to imagine this is purely a case of some independent, parallel development; and it is also noteworthy that this singing has been recorded only amongst other country-hillbilly performers of this era and did not cross racial boundaries in such a clear-cut fashion.¹⁰⁰

I would add that the traditional (and metaphoric) pastoral image of a cowboy singing on his horse is surprisingly close to the one of ancient Tuvans and Mongolians who used to sing overtones while riding in the Russian prairie!¹⁰¹ Although Miles has been recorded, his self-distortion technique had nothing to do with recording technology. In contrast, chapters 2 and 3 give an account of a number of pioneering vocal staging practices that exploited the possibilities of recording and electrical amplification in their early stages.

¹⁰⁰ Email received 27 July 1999.

¹⁰¹ One could even argue that loneliness, which is so much associated with the solitary rider (a recurrent theme in country music), could lead to the development of such a singing technique in order to hear more than one human voice-sound at the same time... Also, there is a specific kind of harmonic chanting performed by some death metal singers, which is often (and wrongly) thought of as being an effect produced artificially.

1.3. Summary

This chapter has allowed us to note that vocal staging existed long before the advent of electricity. In fact, not only is the practice of staging voices deeply anchored in our culture, but it is also widespread and worldwide. Moreover, the contexts in which the practice generally occurs are related everywhere with ritual and/or spectacle. That this practice is widespread is most probably related to psychoacoustical factors, as has often been suggested in the chapter. We will now turn to the study of vocal staging from the advent of electricity. Also, from now on our observations will be limited to Western culture, as well as limited to artistic practices related to radio, theatre, cinema and, later on, music.

Chapter 2

Pioneering Uses of Electrical Vocal Staging in Radio, Theatre and Cinema

Une histoire véritablement matérialiste devrait redonner à la technique son rôle, non pas en faire une démoniaque perversion moderne, mais montrer comment elle est une active productrice de l'art.

(Hennion and Latour 1996: 240)

2.0. Introduction

2.0.1. Staging the Voice in the Age of Electricity

As stated earlier (0.3.1), since the advent of electrical amplification and audio recording techniques, it has become 'easier' to stage the voice. We have also seen that the very fact of electrically amplifying a voice, notably through the use of the microphone, is already a staging practice (0.4.1).¹⁰² The same is of course true for audio recording. As soon as a sound is recorded and played back, it consists of a deformation, a *re-presentation* of a reality, and already some *mise en scène* has occurred, for 'even the most crude, the most primitive reality, when heard through a loudspeaker [...] is a result of a subjective perception

¹⁰² According to Sean Cubitt (1984: 220), 'The amplified voice is an ideal form, an image like a mirror image. It is like us yet bigger, more perfect, almost godlike [...]'. See also 2.0.2 below about the microphone.

of the world, a revealed choice' (Gryzik 1984: 57).¹⁰³ Alan Williams (1980: 58) offers a more detailed position.

My contention is that in sound recording [...] the apparatus performs a significant perceptual work for us—isolating, intensifying, analysing sonic [...] material. It gives an implied physical perspective on [...] sound source, though not the full, material context of everyday [...] hearing, but the signs of such a physical situation. We do not hear, we are heard. More than that: we accept the machine as organism, and its 'attitudes' as our own.¹⁰⁴

As we have seen in chapter 1, however, efforts to deploy sound in order to produce effects on listeners did not start with the advent of electricity. On the other hand, electrical technology has provided much better control over sound, giving 'the audio recording medium resources for creative expression that are not possible acoustically or in the reality of live, acoustic performance [...]' (Moylan 1992: 7). In the words of Richard Middleton (1993: 179), 'Modern recording technique has hugely increased the variety of possible configurations',

¹⁰³ '[...] même la réalité la plus frustrée, la plus primitive, qui apparaît dans le haut-parleur [...], est le résultat d'une perception subjective du monde, un choix révélé'.

¹⁰⁴ In the case of mono recording, Alec Nisbett (1972: 355) adds that 'It must be remembered, when we are talking about distortion, that practically every sound we ever hear in mono—however high the quality—is a rearrangement of reality according to a certain special convention. Monophonic sound is distorted sound in every case except the one where the effective point source of the loudspeaker is being used to reproduce a sound which is itself confined to a similarly small source. Thus, every balance (even a single voice)—i.e. every carefully contrived mixture of direct and indirect sound—is a deliberate distortion of what you would hear if you listened to the same sound "live". But this distortion is accepted so easily as the conventional form of the medium that very few people are even aware of it [...]'. See also Lastra 1992; MacDonald 1995: 88; and section 3.2.2.1 below.

thus ‘magnify[ing] the “staging” possibilities found in pre-classical ritual, drama and dance’.¹⁰⁵

Since the 1920s much experimentation has been conducted in order to find ways of staging effectively and imaginatively the amplified or recorded voice-sound, mostly for artistic purposes. This chapter offers an overview of some of these explorations that have occurred in a number of artistic disciplines, such as radio drama, sound poetry, *musique concrète*, theatre, and cinema.¹⁰⁶ But before this, we must look at one important device that has radically changed the way voice would be heard: the microphone.

2.0.2. The Microphone

2.0.2.1. Historical Overview

Even though the word ‘microphone’ appeared as early as the 1820s, it is generally acknowledged that the first electric microphone was developed in 1875-76 by Alexander Graham Bell when he laid the foundation for the telephone. At about the same time (1877) Thomas Edison and Emile Berliner obtained a patent for a reasonably sensitive microphone, while Werner von Siemens and Georg Halske also developed their own versions in 1878. The big breakthrough occurred in the beginning of the 1920s, when the first radio stations went on

¹⁰⁵ D.M. Howard, A. Hirson and G. Lindsey (1993: 34) describe in more detail some of the possibilities offered by electric recording technology: ‘The increasing complexity of the facilities available in today’s studios for post-processing of recordings enables the studio engineer to modify sounds readily, in a number of ways. Signals can be sampled and played back at different speeds, which has the effect of altering time and frequency in the original recording. Reverberation can be added to simulate performance in acoustic spaces of various sizes. Special effects such as flanging and chorus and phasing are used to add dynamic interest to the recorded sound by altering the frequency and/or time domain characteristics of the originally recorded signal. Signals can be pitch-shifted to transpose the key of the recording or to correct for intonation inaccuracies. Frequency domain characteristics of the music can also be altered by means of the equalisation (EQ) controls on a mixing desk’. See also Jullien and Warusfel 1994: 82.

¹⁰⁶ Early practices in recorded popular music are examined in chapter 3.

air—notably following the invention of vacuum tubes—producing an enormous demand for high-quality microphones (Bollen 1999; Borwick 1990: 9-12). As exposed in 2.1 below, radio is quite at the centre of strategies developed by artists and technicians in their efforts for *staging adequately the voice through the microphone*. The microphone, just as the megaphone earlier, was also used in the context of public performances.¹⁰⁷

2.0.2.2. From Public Performance to Intimacy

The advent of the microphone has made possible a quite faithful amplification of the voice in terms of intelligibility. In public performances, the microphone's function was primarily 'to provide enhancement of volume [...]: that is, to achieve artificially what, in different conditions, had once been achieved through laboriously learned techniques of vocal projection' (Johnson 1999). However, after a number of experimentations with the device (apparently mostly conducted by women singers, according to Johnson 1999; 2000), new techniques were developed leading to a new aesthetic of public speech and singing. In 1936, Rudolf Arnheim (1936: 78) described an approach to singing that had already been present for some time and which came to be known as 'crooning':

¹⁰⁷ See also 1.1.3.2.2.1 above about the megaphone.

In music especially [...] a special art of intimate singing [...] for the microphone has already developed. [...] The Whispering Singers, Jack Smith, the Revellers and others, by their intimate approach to the listener, charmed us in an entrancing and quite original way. They brought an entirely new principle into public performances which hitherto had been almost universally based on methods of the lecture-hall, pulpit and stage, and which therefore employed powerful mass effects. With the Whispering Singers one had the comfortable feeling of how well suited their speciality was to the technical conditions [...]. They were and are representative of the first microphone generation. Just as we take for granted today that film and stage should not without more ado lend their actors to each other, in the same way in the acoustic realm microphone artists will be differentiated from 'concert-hall artists'.

According to Bruce Johnson (1999), the microphone, then, not only allowed amplification of the voice, but also 'expanded the range of experiences which can be projected in public singing', notably through the 'explicit presentation of states of mind and feeling that were difficult to project through pre-electrical vocal techniques'. Thus, 'Intimacy, tenderness, anxiety, coyness', as well as 'Softness' and 'certain vocal nuances and ambiguities' constituted experiences not directly replicable on stage, and 'which [were] integral to the expression of states of mind and feeling in day-to-day social practice'.¹⁰⁸ In other words, this 'diverting' (Julien 1999) of the original microphone's function opened the way to a new palette of expression (mostly associated with intimate experiences) that was to be exploited in the future in different artistic contexts. Of course, this new expressive potential has been explored (and expanded) not only in the context of public performance (public singing, theatre, etc.), but also in radio, cinema and recorded music.

¹⁰⁸ Richard Middleton (1990: 85) writes along the same lines about the effects of the introduction of *electrical* recording in 1924-1925: '[...] one of its effects was the development of "crooning", which depends on the microphone, and this tied in perfectly with the intimacy, privacy and domesticity of home music-listening—indeed crystallized it'.

2.1. Radio

2.1.0. Introduction

Radio as we know it started in the 1920s following some thirty years of experimentation around electromagnetism and wireless communication.¹⁰⁹ In radio's early stages, audio engineers and other 'audio artists' were experimenting as much as they could in order to exploit the fantastic possibilities offered by the new medium: use of the microphone, sound effects, editing, etc. In the words of Rudolf Arnheim (1936: 15), 'the art expert must have rejoiced when, with wireless, artistic practice for the first time offered him the acoustic element alone'.¹¹⁰ These experimentations took place notably around radio drama production.¹¹¹ The equipment available also allowed a few 'rash' artists closely connected with radio to explore poetry and music from a new perspective.

2.1.1. Radio Drama

Radio drama became popular very early in the history of radio, and already in the 1920s and 1930s artists and engineers used all available means to evoke images for the listener with only the help of sound. In order to do so, a large number of sound effects were used (explosions, rain, gunshots, etc.), including techniques for staging the voice-sound.

¹⁰⁹ For more information on the early years of radio see, among others, Archer 1938; Douglas 1987.

¹¹⁰ Arnheim (1936: 34-35) goes further when he foresees the potential of the new medium: 'The new and close alliance of natural and artificial sounds will not only create a new branch of art, but will also bring about a refinement of our sensibility'.

¹¹¹ Early experiments, however, were sometimes quite dubious: 'For a radio play about dwellers in a lighthouse, a large scaffolding was erected in a German wireless studio, from the top of which the actor declaimed. We can assume that this expensive construction was entirely superfluous, for, acoustically speaking, voices from above the microphone sound just the same as voices on a level with it' (Arnheim 1936: 56).

In consultation with the director, [the engineer-technician] is responsible for the selection of microphones to give the best required effect, and he creates the most suitable acoustic area for a scene to be played in. He will ‘treat’ voices to the director’s specification (the most obvious of these are the telephone distort or the ‘thinks’ voice) [...]. He also has dominion over a minor mythological nymph known as ‘Echo’, who is very useful if you are in a large empty church or trapped amongst the mountains or given to dreams (Tydeman 1981: 23).¹¹²

Since certain sounds ‘exist only in our imagination [...]—trolls, spectres, mermaids, inanimate objects to which speech is given’ and since ‘We do not *know* how certain things sound’ (Tydeman 1981: 24), some unusual techniques were needed in order to get satisfactory effects. For example, here is a description of the opening theme for a 1930s American CBS science-fiction show:

The opening and closing theme of the show was the combination of a drum roll on the sound-effects thunder drum and the announcer’s voice (with lots of echo) intoning, ‘Buck Rogerrrrs... in the twenty-fifth century!’ Having the announcer say the line into a microphone placed near the strings of a piano would make the strings vibrate in a way that gave his voice exactly the eerie, futuristic sound the show was looking for.¹¹³ [...] It is interesting to note that more than 50 years later, this piano effect was still being used in Hollywood for such films as [Spielberg’s] *Raiders of the Lost Ark* (Mott 1993: 109).

Similarly, ‘In radio plays where no naturalistic situation is, or need be, represented, resonance [artificial reverberation] can be used purely as a means of expression. The prologue in Heaven from Goethe’s *Faust* produced on the wireless could make the voice of the Lord soar

¹¹² Echo and reverberation are extensively discussed in the context of recorded popular music in 3.1.1, 5.1.1, and 5.3.1 below. See also 2.3 about vocal staging in cinema which presents many examples of the use of reverberation.

¹¹³ Of course, the sustain pedal must be pressed down in order to get the effect.

far and free, while Mephisto's earth-bound voice would echo from a muffled room' (Arnheim 1936: 102).

This last statement by the German sound engineer attests that experimentation with sound in radio drama also took place in German *Hörspiel* and in later *Neues Hörspiel*; but it was also the case in British radio drama and French *théâtre radiophonique* where special effects of some sort were similarly used for depicting particular settings or for arousing particular emotions.¹¹⁴ Thus, 'sound deformations that are systematically obtained—especially with voice—[...] accentuate a number of impressions with unexpected intensity, such as those produced by the whisper from the most intimate confidence, or by a distance effect apparently suitable for the mysterious, the fantastic and the unusual' (Veinstein 1965: 1587).¹¹⁵ By electrically staging the voice, it then became possible to hear the voices of God or spirits, for example. According to French cinema and radio theorist Étienne Fuzellier (1965: 38), the advent of electrical vocal staging also allowed to represent a psychological action directly from the interior, literally eavesdropping on a character's mind, or to create parallel worlds, just as in this French radio drama:

In *Foire aux vanités* [...] a normal voice in the sonic foreground and a reverberated voice in the background suggest both different locations—one character seems to speak close to the microphone, the other seems farther as in a very large room—and different levels of reality—one belongs to the real world, the other to the imaginary world (Fuzellier 1965: 30-31).¹¹⁶

¹¹⁴ See, among others, Baudou 1997; Cory 1974; Fuzellier 1965; Keckeis 1973; Knilli 1970a, 1970b; Lander 1994; Tydeman 1981.

¹¹⁵ 'Les déformations sonores, en particulier celles des voix, obtenues systématiquement [...] accentuent avec une intensité imprévue des impressions aussi diverses que celle produite par le chuchotement de la confidence la plus intime et celle de l'éloignement que supposent le mystère, le fantastique et l'insolite'.

¹¹⁶ 'dans *Foire aux vanités* [...] une voix normale en premier plan sonore, une voix réverbérée à l'arrière-plan suggèrent à la fois une différence de lieux (un des personnages semble parler près du micro, l'autre plus loin dans une immense salle) et une différence de niveaux de réalité (l'un appartient au monde réel, l'autre au monde imaginaire)'.

Of course, more often these vocal staging effects were used in fantastic or science-fiction works rather than in other more realistic genres.¹¹⁷ But there are two forms of expression also closely related to radio that exploited (and still exploit) manipulation of the voice-sound extensively—sound poetry and *musique concrète*.

2.1.2. Sound Poetry and Musique concrète

2.1.2.0. Introduction

Sound poetry (also referred to as ‘phonetic poetry’, ‘concrete poetry’, or ‘material poetry’) and *musique concrète* (also referred to as ‘electroacoustic music’, ‘electronic music’ or ‘acousmatic music’) are similar in that both artistic disciplines use audio recording as their medium.¹¹⁸ Moreover, both are characterised by some degree of sound manipulation. However, *musique concrète* relies almost exclusively on sound manipulation whereas many sound poems are simply a recording of a particular performance. It can become sometimes

¹¹⁷ For an exhaustive account of French radio dramas involving some sort of mystery (science-fiction, fantastic, detective, etc.) see Baudou 1997.

¹¹⁸ A number of distinctions are needed here.

- a) **Sound Poetry:** Although ‘sound poetry’ and ‘phonetic poetry’ practically refer to the same practice, the expression ‘material poetry’ is more general and ‘effectively names the entire historical and cultural continuum’ (Greene 1992) of a set of practices roughly concentrating on, and exploiting visual, spatial as well as sonic aspects of poetry—as opposed to the more traditional *literary* form of poetry. Still according to Greene, ‘Concrete poetry’ is covering a similar reality, yet ‘with a certain chronological and multinational import, [being] virtually a brand or trademark for the program it represents in post-modern literature’. Sound poetry, then, is a specific form of material poetry (or concrete poetry) concentrating on the voice-sound (see 2.1.2.1 below). For further details, see also Gomringer 1999; Solt 1968; Wendt 1996a; 1996b; 1996c.
- b) **Musique concrète:** Here, the most general term might be ‘electroacoustic music’ which tends to include all ‘experimental’ forms of expression presenting electrically produced or altered sounds. This can range from pieces of *musique concrète* (see 2.1.2.2 below) to hybrid performances where traditional instruments may be played ‘live’ along with pre-recorded excerpts. For its part, ‘acousmatic music’ tends to refer to electroacoustic music conceived *specifically* for a recording medium—independently from the origin of the sonic material (electronic or ‘natural’). Finally, ‘electronic music’ is usually associated with the use of sounds mainly produced by means of electronic instruments such as synthesizers—although it might include sounds taken from the ‘real world’ as in *musique concrète*. We could also add ‘computer music’ to this list, an expression bringing even more confusion since today’s computers allow to do both electronic music (computer generated sounds) and *musique concrète* (through digital sampling performed with the computer), not mentioning the possibility of including MIDI controls, etc.

quite difficult, from a listener's standpoint, to label a piece as 'sound poem' or 'electroacoustic work'.¹¹⁹ Finally, as previously mentioned and as portrayed in the two following sub-sections, another important common feature is that the birth of both forms of expression was largely bound with the advent of radio.

2.1.2.1. Sound Poetry

From an aesthetic point of view, sound poetry focuses on the voice-sound as the basic material. Consequently, sound poetry's repertoire mainly consists of recorded poems that exploit the sound of the uttered words (which are often manipulated) and in which the actual meaning of words (if they do occur) is usually less important than the aural presentation.¹²⁰ Pierre Garnier (1968: 79) explains that it was sound recording that provided a number of poets with new directions for their work. Not only was it now possible for them to directly recite the poem without the use of writing, but it was also an occasion to manipulate the voice through editing, superimposition, erasing, use of echo effects, etc. The consequent dependence upon the development of technology has been notably expressed by Belgian sound poet Paul De Vree (n.d.), who wrote in his *Manifesto*:

¹¹⁹ It has to be mentioned that sound poetry's aesthetic is mostly directed towards the sonic possibilities of the voice itself rather than towards its further manipulation. In sound poetry, a voice might be altered in order to provide a different 'colour' to the performance, whereas in *musique concrète* the idea is more often to render the voice-sound as unrecognisable as possible: 'Text-sound composers [i.e. sound poets] have a somewhat different approach to the use of timbre and sound than electro-acoustic musicians who use the human voice for their primary sonic source. The blurring of these two different ways of working has caused some controversies and confusion. The basic difference lies in the observation that text-sound and sound poetries, emphasize the fact that vocal sounds are created by the body, and that the very act of their creation provides one with the structure for their arrangement. A good sound poem is structured from an internal system of emotional connections rather than an external one' (Wendt 1996c). Nevertheless, there are many examples of sound poems presenting manipulation of voice.

¹²⁰ This aesthetic position can be viewed as very close to rock music's: 'The words of a [rock] song matter not only as meaningful signs but as human noise—as sounds which convey paralinguistically something of the personality, emotion, attitude at their source. This is especially so for songs and genres in which the voice comes to matter more than the words it carries, the words being merely the means by which emotion is channelled, directed, explained' (Clarke 1983: 205).

Phonetic Poetry cannot exist without a reinvention of the recitation, that is to say the sonorization or the manipulation of sound. Actually, all depends upon the new possibilities of mechanical expression for realization of the transmission of the total sensibility of the poem.

In its early stages, when sound poetry was largely dependent on radio both for its production and diffusion, a first generation of sound poets was exploring this new means of expression, often altering the voice-sound in their attempts at staging their voice effectively.¹²¹ Thus, from 1930 to 1938 for example, French surrealist poets such as Paul Deharme, Fernand Divoire, Pierre Descaves and others included sound manipulation in their newborn art form (Veinstein 1965: 1583). Following this, the next generation of sound poets further manipulated the voice-sound. For example, Henri Chopin (born 1922), a central figure of sound poetry, used some strange reverberation effects in 'Rouge' (1956). Even William S. Burroughs (1914-1997), a name associated with the Beat generation, manipulated his voice (editing, speed modification, etc.) in sound poems such as 'Sound Piece' (c.1960) and 'Curse Go Back' (c.1960).

2.1.2.2. Musique concrète

French artist Pierre Schaeffer (1910-1995) was not a musician but a radio engineer when he founded the RTF electronic studio in 1944. He then undertook experiments which resulted in him being a leading figure in the creation of a new musical genre—*musique concrète*: 'Working with found fragments of sound—both musical and environmental in

¹²¹ As in the case of *musique concrète*, apart from the presence of audio recording equipment in radio stations, this dependence was also largely reliant on the presence of competent people (namely sound engineers) for manipulating it.

origin—he assembled his first tape-machine pieces, collages of noise manipulated through changes in pitch, duration and amplitude; the end result heralded a radical new interpretation of musical form and perception’ (Ankeny 1997). His most famous early work, co-written with Pierre Henry, was named *Symphonie pour un homme seul* (1949) and employed only sounds from the human body.¹²² One of the work’s movements, called ‘Erotica’, is notably interesting for its heavy manipulation of the voice mostly through disc looping.¹²³ According to Schaeffer (1965: 121), these years of experimentation led him to the sources of a babbling and roughly sketched language that disconcerted and scared him.

A few years later, similar artistic exploration was taking place in electronic studios in Köln, Germany, where voice-sound was also extensively transformed:

In particular there were the classic pieces which manipulated voice such as Karlheinz Stockhausen’s *Gesang der Junglinge* (1956), Luciano Berio’s *Thema: Omaggio a Joyce* (1958), Herbert Eimert’s *Epitaph für Aikichi Kuboyama* (1962). These works approached the manipulation of language each from a different point of view, however they made a conscious use of vocal timbre as a parameter within their musical compositions (Wendt 1996c).

Electric staging of voice has also occurred in more ‘traditional’ forms of expression, such as theatre and cinema.

¹²² The piece was conceived with the help of sound engineer Jacques Poullin (Palombini 1993: 542).

¹²³ At the time, Schaeffer and Henry were using turntables since tape recorders were not yet available to them (Schaeffer 1965: 121).

2.2. Theatre

Harold Burris-Meyer is known for his pioneering work on sound in the theatre during the 1930s and 1940s. A need for such experimentation had been felt by Burris-Meyer notably because the sense of sight was still much more exploited (and is still today) for its potential dramatic effects than hearing:

The artist in the theatre not only has a flexible tool in light; he has a considerable body of knowledge which makes it possible for him to get definitely predictable results with the visual component of the show. [...] With respect to the auditory component of the show, however, we are still in a sub-primitive condition (Burris-Meyer 1940: 346-347).¹²⁴

In a series of writings (Burris-Meyer 1940; 1941; Burris-Meyer and Mallory 1950; Burris-Meyer, Mallory and Goodfriend 1979) Burris-Meyer describes many examples of electric manipulation of the voice in order to provoke dramatic effects on the viewer-listener.

The most peculiar example might be his setting of the ghost's voice in Shakespeare's *Hamlet*, a work we have already mentioned (1.1.3.2.1 above), and for which he 'made a sepulchral voice which would be consistent with the translucent ectoplasmic figure which the audience saw. Using a normal human voice to start with, we distorted it until it seemed suitable' (Burris-Meyer 1940: 348). Burris-Meyer explains how the sound has been altered:

¹²⁴ Dan Lander (1994: 12-13) has more recently expressed a similar opinion: 'It is the gaze that has preoccupied theoretical ruminations in western art discourse. While there now exists a massive body of deliberations on the ontology of the image, representational strategies, stasis, objecthood, perspective, body/object relations, performative tactics and the resultant consumptive transactions that accompany the digestion of the visual arts, an autonomous language suited to the task of developing a discourse on non-objecthood, the time-active and the de-localized reality of media forms such as radio art remains elusive'. See also Châteauvert 1996: 109, note 19, and Gryzik 1984: 32-33 for similar comments regarding cinema.

In addition to judicious filtering, the effect required the use of a velocity (ribbon) microphone as a pressure instrument by working too close to the ribbon. It is interesting to note that this phenomenon was shortly thereafter adopted in somewhat emasculated form for radio broadcasting and was for a long time part of the standard radio bag of tricks (Burriss-Meyer, Mallory and Goodfriend 1979: 32).

Even the vocoder has also extensively been used by Burriss-Meyer to produce other particular effects. For example, the device was chosen 'to make the synthesized voice of an ass speak intelligible speech for *A Midsummer Night's Dream*, to permit Prospero to speak with the voice of wind and thunder in *The Tempest*, and to give the witches in *Macbeth* inhuman but credible and appropriate voices' (Burriss-Meyer, Mallory and Goodfriend 1979: 26).¹²⁵ Some expressionistic effects have been also exploited by the sound engineer in the context of a play in which a prisoner thinks about a number of earlier episodes of his life.

The audience heard the auditory components of these episodes as he remembered them. Recurring through the reminiscences came snatches of the Judge's reading of the death sentence, which were progressively distorted and motivated the prisoner's finally flinging things about and shaking the bars. As the prisoner's mind distorted what he remembered, so the audience heard it (Burriss-Meyer 1940: 348).¹²⁶

Other effects, such as reverberation, telephone effects and spatialisation have been also used by Burriss-Meyer, both as means of expression and as exploration processes.¹²⁷ For

¹²⁵ See also Burriss-Meyer 1941: 16-17, for more details.

¹²⁶ Unfortunately, Burriss-Meyer does not explain what exactly the effect consisted of, and how it was produced.

¹²⁷ Interestingly, Burriss-Meyer (1941: 18) writes about reverberation that 'Devices for control of reverberation in the legitimate theater and opera must, therefore, possess ultimate flexibility. They must be able to reproduce reverberant conditions, including echoes, found in structures and in nature within the acoustic limitations of the theatre, *and must be susceptible of producing arbitrary, suggestive, or exaggerated phenomena in conformity with artistic demands which do not necessarily involve imitating nature* [my italics]'. It is striking how effects such as reverberation acquire different meanings depending on the context, passing from iconic or indexical representational functions (a given space) to more symbolic and abstracted ones (dreams, God, etc.). More of these alternative meanings are encountered in the following section about cinema (2.3).

example, a combination of vocoder and spatialisation effects have been utilised so that ‘Cheering and chanting [seemed] to come from the theatre audience in the last scene of Eugene O’Neil’s *Lazarus Laughed*, and the laughter was made by voice modulating an organ chord’ (Burriss-Meyer and Mallory 1950: 256). Despite the large number of effects used by Burriss-Meyer, electrical vocal staging is not that frequent in theatre, even today.¹²⁸ On the other hand, cinema is an artistic discipline where much experimentation with vocal staging has taken place, which has given rise to a number of conventional settings that are now widespread.

2.3. Cinema

2.3.0. Introduction

Despite Anthony Gryzik’s previous study of the *mise en scène* of sound in cinema (Gryzik 1981; 1984; see also 1.0 above), this section presents some particular cases of vocal staging mostly encountered in the early stages of this form of expression. Scholars have just recently started to consider sound as important as the image in cinema, for ‘The belief that aural techniques are a means of expression inferior to visual ones is shared by most film scholars and, indeed, by many filmmakers’ (Weis 1982: 13). The following sub-sections will thus attempt to show how powerful the manipulation of only one aspect of sound, namely vocal staging, can become when adequately used. Moreover, even in ‘common’ filmic situations—such as a dialogue or a comment by a narrator—we shall see how fundamental a

¹²⁸ However, Frederic Maurin (1996: 87) writes that ‘Les spectateurs se sont habitués [...] à entendre des bruits d’avion passer sous leur fauteuil et, depuis une quinzaine d’années, des voix sonorisées tomber du plafond, se répercuter en écho, se disperser ou se recouvrir jusqu’à saturation, les surprendre par derrière ou de côté, les caresser, les étreindre, les envelopper tout entiers’.

role vocal staging might take. Because of the size of the repertoire it is obviously not possible to provide an exhaustive description of sonic vocal staging practices found in cinema; all the more so since this dissertation is concentrating mainly on popular music, not on cinema. It is hoped, however, that the selected examples will give a fair enough illustration of what is susceptible to be heard (and seen) in the repertoire.

2.3.0.1. Aesthetic Considerations

Like theatre, cinema combines sonic and visual information. However, there is a main difference between these two forms of expression. Theatre is mostly performed 'live', usually with little or no pre-recorded material. On the contrary, the very essence of cinema is directly linked with recording technology: recording of image and (after the 1920s) recording of sound.¹²⁹ One can thus say that cinema is an art of the artifice: 'The cinematographic spectacle [...] is completely unreal; it takes place in another world' (Metz 1974: 10). This 'other world' is thus propitious for presenting a number of situations difficult or impossible to encounter or render in real life, such as inner thoughts, remembrances, dreams, presence of an 'omniscient' narrator, etc.¹³⁰ Conversely, the cinematic apparatus allows alternative

¹²⁹ It is of course possible to find theatrical plays displaying some pre-recorded material or using some sort of amplification (as discussed in 2.2 above); but one can say that in general, theatre is considered as a 'direct' form of expression, whereas cinema is 'indirect', in that it is possible to re-work any part of the film after images and sounds have been recorded (through editing, cutting, remixing, re-recording, etc.). Moreover, it is even possible in cinema to have as many takes as needed in order to get the expected result, whereas theatre is essentially based on (and ultimately exploiting) its ephemeral nature. Jean Nichet (1985: 166), commenting on off screen voice (see 2.3.1.2.2 below), adds that 'on ne peut faire du théâtre comme au cinéma. Quand un metteur en scène fait alterner une voix off enregistrée et la voix naturelle de l'acteur en scène, il reste très loin du procédé cinématographique. Dans un film, la voix off et la voix in, inscrites sur la même bande-son, ont la même facture, la même facticité. L'enregistrement ne change pas de registre. Au théâtre, au contraire, on saute d'un effet-son à une voix naturelle, ce qui crée un « drôle d'effet »'. Similarly, it is also possible to find movies trying to reflect as much as possible our perception of 'reality', as was the case, for example, with many works from the 'cinéma-vérité' movement in France during the 1970s. Here again, despite a clear tendency toward reflecting reality, such films still rely on recording technology (and, in some extent, are limited by it). See also 3.0 below for an analogous discussion about aesthetics of recorded music.

¹³⁰ Marcel Martin (1985: 210-224) writes about 'secondary narrative processes' when referring to these techniques.

representations (often necessary precisely because of the very nature of cinema) of situations encountered in day-to-day life. Accordingly, in the context of filmic narrative, a number of techniques (artifices) have been developed, gradually becoming an integral part of the cinematographic ‘vocabulary’.

2.3.0.2. Historical Considerations

It is not our desire to rewrite the history of the ‘talkies’ here: specialists have already written about the subject.¹³¹ However, it is interesting to note that as soon as sound began to be widely used in cinema, some vocal staging practices were already present, and in most cases directly imported from microphone techniques described in 2.0.2.2 above.¹³² For example, according to Rick Altman (1995: 69), ‘Starting with *The Jazz Singer* in October 1927, audiences were increasingly exposed to a new kind of sound—not the theatrical kind meant to be projected to a larger public, but a new more intimate sound that is presented as private, and thus can only be *overheard*’.¹³³ Altman is then referring to the famous scene in which the character played by Al Jolson speaks to his mother about the good things that should happen to their family in a near future.

¹³¹ For a quite detailed account of the first days of the talkies, see Eyman 1997 (especially pp. 25-142). For a good introduction of the history of sound in cinema, see, among others, Altman 1985, 1995; Ulano 1994. For an introduction to sound in cinema in general, see Altman 1980; 1992e; and Weis and Bolton 1985b, all of which include essays by scholars specialised in the field. For a history of talkies from *The Jazz Singer* (1927) to 1949, see Sarris 1998.

¹³² According to Nancy Wood (1984: 23-24, note 31), most of these aural secondary narrative processes, such as depth simulation, would have been initiated in cinema rather than in radio. Wood refers to Arnheim 1936 to support her argument.

¹³³ It must be mentioned that, strictly speaking, it is not *The Jazz Singer* which is the first movie featuring sound; rather, *The Jazz Singer* ‘represents the beginning of real commercial acceptance of the transition to sound films’ (Ulano 1994). Eyman (1997) provides many examples of films including sound (even synchronised) long before 1927.

[...] when [Jolson] sings and talks privately to his mother, an entirely new kind of relationship is established between the performer and the amplification system. [...] in the privacy of the family living room [...] the amplifying technology operates in spite of and against Jolson's quiet demeanor, thus changing us spectators from the destined audience of a self-conscious performer to a group of auditory voyeurs intent on hearing *sounds that are not meant for us* (p. 69).¹³⁴

As was the case with radio drama (2.1.1 above), it then became possible in cinema to eavesdrop on intimate conversations, or even on a character's mind. It also became possible to 'replace' most narrative comments—until then generally provided in the form of titles—by comments *spoken* by a narrator. This new set of auditory cues (along with some others) was to become a central element of the sound cinema vocabulary. Of course, most of the time image *and* sound act simultaneously to depict such situations. Consequently, the following section offers an account of some techniques implying sound, but almost always in relation to the corresponding visual counterpart.

¹³⁴ Historically, cinema has never really been 'silent' since projections were almost always accompanied by live music played by a musician or an orchestra—often acting as sound-effects engineers—and often 'described' by an on-stage commentator—not to mention comments, yelling, chanting and noises coming from the audience itself (Châteauvert 1996: 98-99). Then, the contrast described by Altman and experienced by the time's spectators must have been even stronger to the extent that they were used to sounds that were more 'theatrical', coming from a stage within a large room and uttered (or played) loud enough for everyone to hear properly. Spectators were thus not 'prepared' to hear 'sonic intimacy' in such a context, hence the effect of surprise. For more information on the role of the on-stage commentator (named the 'barker') before the talkies, see Gaudreault and Lacasse 1993.

2.3.1. Voice Configurations in Cinema

2.3.1.1. Definitions

Jean Châteauevert (1996: 141-150) has proposed a classification of voice configurations relevant to their presentation on screen.¹³⁵ These configurations are defined according to two criteria: firstly, whether or not the source producing the voice-sound is visualised on the screen (visualised source v. non-visualised source); secondly, whether or not the voice-sound is 'accessible' by eventual characters within the story space (diegetic accessibility v. extra-diegetic accessibility). According to these criteria, Châteauevert proposes four basic categories, which will constitute the frame of the following sections. The first of these basic categories is the *onscreen voice*, which is diegetic and whose source is visualised, and which accounts for most of the voices heard in films (dialogues and monologues for which the speakers or 'thinkers' are shown on the screen). The second category, *off screen voice*, includes voices that are accessible to the characters within the story space (diegetic) and whose source is (often momentarily) not visualised. A simple example would be a voice spoken from behind a shut door and heard by characters within the story space ('Let me in!'). The *aside*, the third category defined by Châteauevert, constitutes an interesting case: even though the source is visualised, the sound is *not* accessible within the story space. This technique is of course largely used in theatre (see also 1.1.2.1.4 above) but more rarely in cinema. In such situations, a character within the story space typically starts to address the audience—looking at the camera—while the characters sharing his/her story space cannot

¹³⁵ This whole section is mostly based on Châteauevert 1991;1996. Among the many proposals found in sound cinema theory concerning voice configurations, Châteauevert's has been considered the most satisfactory. See also Bordwell and Thompson 1993: 307-316; Chion 1982; Doane 1980.

hear him/her (often momentarily).¹³⁶ Finally, Châteauevert's fourth category is the *voice over*, which is extra-diegetic and whose source is not visualised. This is the typical configuration for an unseen 'omniscient' narrator whose voice is not accessible to characters within the story space. Table 2.3-1 summarises Châteauevert's categorisation (1996: 141).¹³⁷

Table 2.3-1: Châteauevert's Voice General Categorisation

SOURCE	Visualised	Non-Visualised
ACCESS		
Diegetic accessibility (within the story space)	Onscreen Voice	Off Screen Voice
Extra-diegetic accessibility (outside the story space)	Aside	Voice Over

In the next sub-section, we will expand on each of these four general categories (which of course include sub-categories) by looking at how these configurations, especially in earlier films, find expression in terms of vocal staging.

2.3.1.2. Diegetically Accessible Voices

2.3.1.2.1. Onscreen Voice

2.3.1.2.1.1. Dialogue

According to Châteauevert (1996: 142), 'dialogue corresponds to the canonical form of [filmic] discourse, uttered in a loud voice within the visualised diegesis, and which is

¹³⁶ A recent example can be seen in David Fincher's *Fight Club* (1999) during the 'restaurant scene' when Jack (Edward Norton) is momentarily speaking to the camera—commenting on Tyler's (Brad Pitt) activities—while nobody in the restaurant can hear him. Other earlier examples of asides can notably be found in Laurence Olivier's adaptation of *Richard III* (1955) or in Sam Wood's *Our Town* (1940), as well as in many other films.

¹³⁷ Châteauevert's original table is concerned with sound in general. For the purpose of the present study, the word 'sound' has been changed for 'voice'.

potentially accessible to any character being in the same environment’.¹³⁸ This does not mean, however, that a dialogue must necessarily take place between two or more characters. It includes any form of discourse ‘that can take the form of an effective dialogue or of a monologue spoken in a loud voice, both susceptible of being heard by any character appearing in [the same] environment’ (p. 142).¹³⁹ The number of examples of dialogue in films is of course virtually infinite. However, the idea of having a dialogue happening in a *given* environment is important in the context of this study. Indeed, it is almost systematic that voices heard in a dialogue configuration will bear a specific *spatial signature*¹⁴⁰ ‘naturally’ coherent with the environment within which they are appearing to sound, or, more precisely, coherent *enough* for the listener-viewer to be able to reconstruct a plausible narrative.

Just as the voice must be anchored by a given body, the body must be anchored in a given space. The fantasmatic visual space which the film constructs is supplemented by techniques designed to spatialize the voice, to localize it, give it depth and thus lend to the characters the consistency of the real (Doane 1980: 36).

¹³⁸ ‘[...] le dialogue correspond à la forme canonique de discours [filmique], prononcé à voix haute dans la diégèse visualisée, et qui est potentiellement accessible à tout personnage se trouvant dans le même environnement’.

¹³⁹ ‘[...] qui peut prendre la forme d’un dialogue effectif ou d’un monologue à voix haute, susceptibles, l’un comme l’autre, d’être entendus par tout personnage figurant dans cet environnement’. Also, Châteauvert (1996: 143) identifies a particular form of dialogue, which he names ‘address’, and which differs only slightly from the dialogue from a visual point of view. Indeed, while, during a dialogue, characters are shown more or less ‘objectively’, the address consists in a discourse aiming *at another character within the story space*, but whose subjective point of view is reproduced by having the speaker directly addressing the camera, just as if the device was the addressee. This particular configuration is different from the aside, whose accessibility is extra-diegetic (see 2.3.1.3.2).

¹⁴⁰ Even though the expression has been coined by Rick Altman (1992c: 23-25), I have chosen to reproduce Andrea Truppin’s (1992: 241) definition: ‘Spatial signature can be defined as a sound’s auditory fingerprint that is never absolute, but subject to the sound’s placement in a particular physical environment. These markers include reverb level, volume, frequency, and timbre that allow auditors to interpret the sound’s identity in terms of distance or the type of space in which it has been produced and/or is being heard’. The concept of ‘spatial signature’ is thus quite close to our ‘vocal setting’, although it is limited to the dimension of space. Consequently, it does not account *a priori* for artificial transformations such as heavy distortion or, say, vocoder.

For example, a scene taking place in a large church is most susceptible to present a dialogue with voices sounding with a corresponding high level of reverberation. Conversely, a close-up discussion between lovers in a bed will most probably present a negligible amount of reverberation. However, some manipulation might be done, either for technical reasons (for example, to keep the text intelligible) or for more artistic reasons. Indeed, the scene in the church just evoked might be composed of a number of visual shots, some showing characters from a quite long distance and others in close-up. While, in a 'natural' situation, reverberation increases in direct proportion with distance, the sound engineer may have to modify quite significantly this ratio in order to keep the dialogue intelligible; in such situations, the level of reverberation is even often left unchanged from shot to shot despite the visual distance shifts.¹⁴¹

On the other hand, effects of contrast, or even more subtle constructions, might be created in order to evoke symbolic connotations. For instance, Mary Pat Klimet (1992: 213) describes a scene in Orson Welles' *Macbeth* (1948) in which characters are seen at a distance, leading the listener-viewer to expect the characters' voices to sound with a fair amount of reverb.

¹⁴¹ Concerning this particular issue, Nancy Wood (1984: 23) provides the following historical observation: 'The problem in strictly adhering to the demand that volume and reverberation [*sic*] alter with each new presentation of a spatial field was the potential *attention* it might attract to the acoustical shifts themselves at the expense of the cinematic voice. [...] The solution to [this] potential [pitfall] seems to have been a discerning use of volume and reverberation changes where the voice was concerned, according to the scenographic situation in general, and the dramatic requirements of the voice in particular'. However, exceptions are notably found in Rouben Mamoulian's *Applause* (1930): '*Applause* does achieve [...] "space effects" through the subtle manipulation of acoustic perspective. When the distance between camera and subject shifts, the sound level changes accordingly. One thinks, for example, of the scene in which there is a change in voice level as the camera shifts from a close-up of chorus singing onstage to a long shot of them from the audience's point of view; or of the scene in which a change in sound level and quality accompanies the camera shift from an on-stage view of a girl singing "Everybody's Doin' It" to a backstage one' (Fischer 1985: 244-245). One should note, however, that Mamoulian's use of sound was different from his contemporaries, Mamoulian having almost an obsession with conforming his audio *mise en scène* with 'our real-life perception of sound' (Fischer 1985: 238).

At first, Welles' characters seem to have this [reverberant] quality, but upon a closer listening, one notices how processed the voices are. Instead of sounding like voices miked from a distance, these voices sound as if they were miked closely, with a reverb effect added later. This lends them an ethereal and mysterious quality.¹⁴²

In the same vein, Patricia Erens (1975: 44) discusses an example, this time taken from Welles' famous *Citizen Kane* (1941):

Another instance of symbolic sound occurs in the correlation between places with a high degree of resonance and concepts of death and tombs. Xanadu and the Tatcher Library are associated with pyramids in the *News on the March* sequence and the Tatcher Library is a memorial to a dead man.

Finally, concerning effects of contrast, Penny Mintz (1985: 290), in her article about Welles' use of sound, argues that when a mismatch between auditory and visual spatial clues 'is ignored, or purposely used to distort the duplication of real sound, [it] makes us vaguely uncomfortable, slightly dislocated, usually without knowing why'. She continues: 'The reaction is very subtle. A sort of floating tension is created which can be used, by the filmmaker, in directing audience response'.¹⁴³ To sum up, despite the very high number of variations encountered in the film repertoire, we can say that in general a shown environment

¹⁴² In this specific case, this technique *might* have been originally used in order to assure a clearer intelligibility. However, a secondary interpretation like Klimet's might emerge indeed, even if such a result was originally unintentional (although unlikely when dealing with someone like Welles).

¹⁴³ This type of audiovisual spatial mismatch has been particularly well exploited by Andrei Tarkovsky (see 2.3.2.2 below).

and its corresponding sonic spatial signature will, to a certain extent, fit together, unless some particular poetic effect is desired.¹⁴⁴

2.3.1.2.1.2. Interior Monologue

A narrative process leading to most powerful effects of intimacy might be the use of interior monologue. Contrary to the dialogue, the accessibility of the interior monologue can be 'limited and only perceptible internally, (generally) by a single character. [...] we then consider the character's thoughts as the source of a discourse that nobody else can hear except for some extraordinary characters [...]' (Châteauvert 1996: 142).¹⁴⁵ Michel Chion (1982: 47-53) has identified two main traits characterising what he names the 'I-voice' (*la voix-je*), a concept that more or less includes Châteauvert's interior monologue.

¹⁴⁴ An interesting case of a dialogue occurring in a non-natural environment might be the dream, whose filmic representation is often underlined by the presence of acoustic and visual special effects. However, the vast majority of these representations are unsatisfactory, leading Jean-Louis Beaudry (1976: 125, note 1) to write that 'The displacement of dream in the projection results unavoidably to send the spectator back to his consciousness; it imposes a distance which denounces [*sic*] the artifice (and is there anything more ridiculous than those soft focus clouds [often accompanied by heavy reverb effects...], supposedly dreamlike representations) and to destroy completely the *impression of reality* which precisely also defines dream'.

¹⁴⁵ 'L'accessibilité du discours peut [...] être limitée et n'être perceptible que de façon interne, (généralement) par un seul personnage. [...] on tient alors la pensée du personnage comme source d'un discours que nul autre que lui-même ne peut entendre sinon quelque personnage extraordinaire [...]'. Châteauvert gives the example of the angels in Wim Wenders' *Wings of Desire* (1987) as a case of 'extraordinary characters' capable of hearing inner monologues. Bernard Dick (1990: 28) comments on another interesting example found in Resnais' *Hiroshima mon amour* (1959) in which a couple's interior monologues alternate as if they were constituting a dialogue: 'As their bodies move toward fulfillment, we hear their voices—his denying that she knows the significance of Hiroshima, hers insisting that she does. But these are not their actual voices: they sound distant, anesthetized. We are hearing the rhythms of poetry, not prose. It is each character's interior that we hear, an interior expressing itself in the language of memory that is made up of both words and images. When the architect's voice says, "You know nothing of Hiroshima", her consciousness replies with pictures of the artifacts she has seen at the museum and newsreel pictures footage of the bombing of Hiroshima. When the woman says, "Who are you?", instead of a verbal reply we see a street in Hiroshima. The man is Hiroshima, the only name she will ever associate with him'.

- a) A criterion of *maximum proximity* in relation to the microphone, creating a feeling of intimacy with the voice, in such a way that no distance is perceptible between the voice and our ear. This proximity is felt through (almost) infallible sonic clues such as the voice's *presence* and *definition*, both of which remain perceptible in the worst [...] conditions [...].
- b) Correlatively, a second criterion of flatness, of absence of reverberation wrapping the voice, which could create a feeling of a space within which the voice would be included. Apparently, in order to sound internally as our own voice, the I-voice should not be inscribed in a particular and sensitive space. It should constitute its own space in itself.¹⁴⁶

Of course, many illustrations of interior monologues displaying these technical characteristics can be traced in the film repertoire.¹⁴⁷ However, following the example of Michel Chion (1982: 49), we will briefly examine one sequence taken from Alfred Hitchcock's *Psycho* (1960).¹⁴⁸ Toward the end of the film, we see Norman (Anthony Perkins) prostrated in his cell, with his mother's voice speaking some paranoiac monologue. Now, we have been previously told in the film that Norman totally identifies himself with his mother.

¹⁴⁶ 'a) un critère de *proximité maximale* par rapport au micro, créant un sentiment d'intimité avec la voix, de façon à ce qu'aucune distance ne soit perceptible entre elle et notre oreille. Cette proximité est ressentie à travers des indices sonores infallibles, ou presque, de *présence* et de *définition* de la voix qui parviennent à rester sensibles dans les pires conditions [...].

b) corrélativement, un deuxième critère de matité, d'absence de réverbération enveloppant la voix et qui pourrait créer le sentiment d'un espace où elle serait englobée. Comme si, pour que la voix-je résonne en nous comme nôtre, elle ne devait pas être inscrite dans un espace particulier et sensible. Elle doit être à elle-même son propre espace'. Apparently, there are exceptions to the latter rule. Indeed, in an ad played on a Liverpool radio station, the inner thoughts of the main character—embarrassed about buying condoms—were heard with heavy reverberation, contrasting with his 'real' voice sounding quite flat in the space of the store when he finally completes his transaction at the cash desk. One reason that could explain this divergence is of course the fact that in radio, contrary to cinema, there are no visual clues (for example, lips that are not moving when hearing the voice of a visualised character). Again, it seems to be a question of contrast (see 5.0.2.2). See also 5.1.3 below for a discussion about flat voice in recorded rock music.

¹⁴⁷ It is notably the case with the example taken from *Hiroshima mon amour* discussed in note 145 above.

According to Elisabeth Weis (1982: 39-40) and Marcel Martin (1985: 214), the first cases of interior monologue in cinema are to be found in Hitchcock's *Murder* (1930) and in Buñuel's *L'Âge d'or* (1930).

¹⁴⁸ This example has notably been chosen because different vocal staging effects are used for other voice configurations within the same film; consequently, other settings heard in this film are discussed in 2.3.1.2.2.2 below. For an enlightening presentation of Hitchcock's imaginative use of sound, see especially Weis 1982.

Chion then asks if it's Norman's interior voice that we are in fact hearing. 'More than that [Chion answers]: it is close, precise, ingratiating, without echo [reverb?]; it is an I-voice that possesses the body as much as the whole image, and the spectator as well'.¹⁴⁹ Furthermore, superimposed on Norman's face, we see the deadly face of his mother. Norman's voice, then, is 'a voice for which the image is internal' (p. 49).¹⁵⁰ Of course, and as exposed in the following sub-sections, this absence of distance and reverberation, which apparently orientates the listener-viewer's interpretation of the narrative, is not exclusively the attribute of the interior monologue.¹⁵¹

2.3.1.2.2. *Off Screen Voice*

2.3.1.2.2.1. Off Screen Dialogue

The off screen dialogue is the same as the onscreen dialogue, except that '[...] its sound source, i.e. the speaking character, is not visible, although his discourse takes place within the visualized diegesis' (Châteauvert 1996: 144).¹⁵² As far as vocal staging is concerned, there is no difference, *a priori*, with the onscreen dialogue: the vocal setting corresponds more or less to the environment within which it is sounding (see 2.3.1.2.1.1

¹⁴⁹ 'Plus que cela : elle est proche, précise, insinuante, sans écho, c'est une voix-je qui vampirise aussi bien le corps de Norman que l'image toute entière, et le spectateur lui-même'.

¹⁵⁰ 'Une voix à laquelle l'image est intérieure'.

¹⁵¹ Don Ihde (1976: 136) makes this interesting remark concerning our representation of an interior voice: 'Although there has been a vast amount of work done on philosophical problems of language, little has been done concerning the examination of concrete forms of thinking as inner speech considered as a type of auditory imagination. In part, this phenomenon as a phenomenon of a special type of auditory imaginative activity may have been overlooked because of the long tradition of interpretation which maintains a "metaphysical" and "Cartesian" stance toward thought. This tradition takes for granted that thought is *disembodied*. Thus in spite of discussion of "mental word", the persistence of a dualism of "acoustic tokens" and disembodied "meanings" continues'. Ihde (p. 141) then turns to a phenomenological analysis of inner speech: '[...] when I turn to inner speech [...] I find it hard to grasp directly. I "catch it" from the fringe; it seems to evade objectification. [...] Inner speech is active, ongoing in its elusiveness, and it seems to be "nowhere" or "everywhere" when noted. [...] Were my inner speech suddenly to become confused and appear to come from elsewhere (as apparently happens in some cases of schizophrenia) I would be startled and confused'.

above). On the other hand, the next voice configuration leads to more unconventional settings.

2.3.1.2.2.2. Absented Voice

The absented voice is probably the most interesting vocal configuration in regard to vocal staging practices, in that it often leads to the use of quite creative effects. Châteauevert (1996: 144) defines this particular voice configuration as follows:

The 'absented voice' corresponds to a discourse whose effective source is not, at the moment of the occurrence, present within the visualized diegesis, but which is nevertheless diegetic in that it is 'perceived' within a dream, a remembrance, or in some imaginary fashion, by the visualized character.

Châteauevert (p. 144) provides the example of the writer's voice superimposed on the letter read by a visualised character. He also mentions the case of Robert Aldrich's *Kiss Me Deadly* (1955), in which the detective is haunted by the murdered hitchhiker's voice repeating—with much reverb—'Remember me'. In fact, it seems that the presence of reverb or echo is widespread when encountering absented voices. If we return to *Psycho*, already discussed in 2.3.1.2.1.2 above, we see that contrary to the interior monologue for which the voice is close and flat, Hitchcock's absented voices display reverberation.¹⁵³ Michel Chion (1982: 49) describes *Psycho*'s 'Marion sequence'.

¹⁵² [...] sa source sonore, le personnage parlant, n'est pas visible, encore que son discours s'inscrit dans la diégèse visualisée'.

¹⁵³ As in the case of the interior monologue, the first film displaying absented voices might well be Hitchcock's 'Murder' (1930): 'The [...] scene takes place in the heroine's jail cell. The camera moves inside Diana's cell as a small door rises like a curtain going up. Then, as the camera stays on the face of the actress, we hear her imagining the play's performance and the stage manager's giving instructions in her absence' (Weis 1982: 40).

[...] Marion (Janet Leigh) is driving, making up a story about what the people who have put their confidence in her must be saying about her: the bank director, one of his colleagues, and the millionaire to whom the stolen money belonged. Their acousmatic voices,¹⁵⁴ worried and then annoyed, are heard upon the image of the face of Marion driving [...]. What indicates that these voices actually resonate ‘in her head’ [...]? The fact that they have been technically manipulated according to conventions, which establish a sound as being ‘subjective’ by ‘unrealizing’ it. [...] In *Psycho*, those manipulations consist of pronounced filtering resembling a telephone effect, as well as artificial reverberation that includes the voices within an imaginary location: that of her head, of her imagination.¹⁵⁵

Chion (p. 49), then, goes further:

If we could start again and have access to elements of *Psycho*'s sound mix before the manipulation, and put back *the same voices on the same images* without filtering and reverberation, close and present, I bet that the relation would then be reversed and that from ‘included’, voices would rather include and command the image: instead of appearing as Marion's hearing, Marion's face would be seen as an image created by the voices!¹⁵⁶

In other words, from the listener-viewer's standpoint, the vocal setting (reverberation and filtering) ‘objectifies’ Marion's subjectivity.¹⁵⁷ One can see, then, how powerful and

¹⁵⁴ Whose sources are not visualised.

¹⁵⁵ ‘[...] Marion (Janet Leigh) est au volant et se fait tout un cinéma intérieur sur les propos que doivent débiter à son sujet ceux qui lui avaient fait confiance : le directeur de la banque, une de ses collègues, et le millionnaire à qui appartenait l'argent volé. Leurs voix acousmatiques, inquiètes puis indignées, sont entendues sur l'image du visage [...] de Marion conduisant [...]. À quoi entend-on que ces voix résonnent « dans sa tête »[...]? À ce qu'elles sont manipulées techniquement, selon des convention qui, en l'irréalisant, établissent un son « subjectif ». [...] Ces manipulations, dans *Psychose*, sont un filtrage prononcé, qui fait ressembler les voix à des voix de téléphone, ainsi qu'une réverbération artificielle qui les englobe dans un lieu imaginaire, celui de sa tête, son imagination’.

¹⁵⁶ ‘Si nous pouvions repartir des éléments de mixage de *Psychose* avant manipulation, et remettre *sur les mêmes images les mêmes voix*, mais non filtrées, non réverbérées, proches et présentes, parions qu'alors le rapport s'inverserait et que d'englobées, les voix se mettraient à englober et à commander l'image : au lieu qu'elles apparaissent comme l'audition de Marion, le visage de Marion serait vu comme image suscitée par les voix!’

¹⁵⁷ Bernard F. Dick (1990: 28-29) describes another potential sequence presenting some absented voices: ‘A character, often the hero or heroine, tosses restlessly in bed while someone's voice *reverberates* in his or her unconscious, repeating key dialogue from an earlier scene’ (my italics).

evocative subtle settings might become when properly used and presented. Other creative uses of similar vocal settings are presented in 2.3.2 below.¹⁵⁸

2.3.1.3. Extra-Diegetic Voices

2.3.1.3.1. *Voice Over*

The most canonical form of extra-diegetic voices is of course the ‘omniscient’ and invisible narrator, which constitutes a typical case of voice over. It is indeed only to this particular case of voice over that this sub-section will be devoted. In the expression ‘voice over’ the term ‘over’ is revealing, in that it implies that the voice seems to be located in a meta-world in which the diegetic world is inserted: the narrator lives ‘over’ the world he is commenting about. As previously mentioned, the voice over is not accessible to the characters occupying the diegetic world.

As in the case of the interior monologue (2.3.1.2.1.2 above) it is flatness and proximity that characterises the usual setting used for voice over. However, what distinguishes the interior monologue from the voice over is both the visualisation of the character and the (relative) accessibility of his/her discourse. As already mentioned, during an interior monologue it is the character’s subjectivity that the absence of reverberation tries to ‘transfer’ to the listener-viewer—contrary to the absented voice whose setting (usually reverberation or

¹⁵⁸ Châteauevert includes another voice configuration in this ‘off screen’ category, namely the ‘displaced diegetic dialogue’, which he defines as follows: ‘[...] le dialogue diégétique déplacé s’inscrit d’emblée dans la diégèse visualisée par son locuteur et par son contenu, mais se distingue du dialogue standard en ce qu’il s’agit d’un dialogue ou d’un fragment de dialogue décalé dans la diégèse, un dialogue qui intervient en avance ou en retard par rapport à la diégèse visualisée’. This configuration is very close to the dialogue, as in the case of the off screen dialogue discussed in 2.3.1.2.2.1 above. Consequently, vocal settings used in such instances are characteristic of the environment within which the voices have been originally, or are to be, sounding. For early uses of this configuration by Hitchcock, see Weis 1982: 36-37.

echo) aims at *objectifying* the character's subjectivity. In the context of a voice over, the process seems to function differently, yet still according to criteria relative to space. Indeed, a number of sound theorists (Châteauvert 1996: 111; Chion 1982: 58; Lastra 1992: 78) write about 'decontextualisation' for characterising the effect produced by the flatness and proximity usually assigned to a voice over. I would like to go further and try to identify the reasons for this decontextualisation to operate, beyond the obvious fact that the voice is sounding in a 'different' space than that of the diegetic, or even sounding in an *absence* of space.

When listening to a voice over, the listener-viewer has no visual anchoring, in that the source of the sound, the narrator, is not visualised—contrary to the interior monologue. Furthermore, we have seen that the voice over is characterised by its extra-diegetic accessibility, thus not located in the diegetic space. What space, then, is the narrator occupying? It is a space that includes the diegetic, *just as the listener-viewer's space does*. In other words, the narrator and the listeners-viewers are virtually sharing the same meta-diegetic space. I would thus argue that to assign flatness to an *acousmatic* voice is to make it sound as if it was produced from the audience's space, for 'if a space exists only through what it is filling, then a being can only exist because it fills a space' (Moles and Rohmer 1978: 20),¹⁵⁹ and the only space that can be filled by an acousmatic voice for which no *representational* space has been previously assigned—i.e. bearing no specific spatial signature—is the actual theatre in which the film is projected.¹⁶⁰ Indeed, any recorded sound,

¹⁵⁹ '[...] si l'espace n'existe que par ce qui le remplit, l'être n'existe que parce qu'il remplit l'espace'.

¹⁶⁰ Accordingly, Vittorio Ugo (1987: 1083) writes that 'L'expérience de la sonorité semble bien montrer qu'une pensée « pure », « a-spatiale » ou « u-topique » des phénomènes acoustiques est impossible. La sonorité a un espace, elle construit un lieu qui en est une composante intégrante, qui peut en être séparée uniquement par un procédé analytique et théorique, tout comme l'on distingue conventionnellement la masse ou la forme d'un objet'.

when reproduced in a given environment—your living room, for example—will be partially affected by the sound characteristics of this environment.¹⁶¹ Now, when a sound has been previously assigned a spatial signature in the recording—heavy reverberation say—the listener can differentiate the sonically represented space from the one he/she is actually occupying, and will thus interpret the sound as existing in another separate space. On the other hand, the only space that can be assigned by the listener to a sound that has been recorded according to Chion's proximity and flatness characteristics *becomes the space within which it is played back*, that is, the listener's space. Rudolf Arnheim identified this phenomenon as early as 1936.

The fundamental difference between deadened and resonant space consists, in the first case, in implying to the listener sitting in his room that the sound seems to come from somewhere out of the same space that he himself occupies; whereas in the second case he is listening in to another, foreign space. In the first case the sound retains only the spatial characteristics of the room in which the loudspeaker stands. In the second case it is accompanied by a new, peculiar, invisible space [...] (Arnheim 1936: 99).¹⁶²

These important considerations are to emerge again in section 5.1.3.2 below.

¹⁶¹ Alan Williams (1980: 53) writes that '[...] "identical" sounds (voices, instruments) seem different in different acoustic environments, a fact that one does not consciously notice in everyday life precisely because the very constitution of a subject that can listen (understand, unify in terms of a common point of reference) requires the (learned) process of ignoring such variations in favor of an identity posited as necessary to them'.

¹⁶² Denis Vasse (1974: 203-204) proposes another type of interpretation which can be related to the 'reaching power' of a voice over: 'Sans lieu, la voix est inconcevable, folle, aberrante : une voix toujours étrange et étrangère qui ne se pose et ne se repose nulle part, irréelle. Une voix qui ne peut plus se recueillir en un lieu qui la caractérise et la spécifie, est littéralement la voix de tous et de personne, échouant à se recueillir dans le silence du corps'.

2.3.1.3.2. *Aside*

Contrary to the voice over, and as previously stated in 2.3.1.1 above, asides are characterised by the visualisation of the commentator/narrator whose discourse is (usually) momentarily not accessible to the characters sharing the same diegetic space. Because of a high number of visual clues—lips moving, gaze directed toward the camera, indifference from the part of the other characters, etc.—it is not that necessary to ‘help’ the listener-viewer by assigning some particular setting to the aside voice. Most often, the aside voice will therefore keep its original spatial signature, sometimes with an increase of proximity if the character approaches the camera. It might happen, however, that the diegetic sonic space be momentarily suspended or significantly lowered for the duration of the aside.

2.3.2. *Subjective, Expressionistic and Poetical Effects*

2.3.2.0. Introduction

We will now leave Châteavert’s categorisation to look at vocal staging in cinema from a different perspective. This section is thus devoted to the study of examples taken from films by a number of filmmakers renowned notably for their creative use of sound, such as Alfred Hitchcock (see also 2.3.1.2.1.2 above), Andrei Tarkovsky, and others. What will interest us here is the poetical impact vocal staging may have on listeners-viewers.

2.3.2.1. Alfred Hitchcock’s Early Expressionistic Effects

Alfred Hitchcock’s use of sound has been considered important enough to have scholars write whole books about it. This is the case with Elisabeth Weis (1982), who considers Hitchcock’s early sound films *Blackmail* (1929) and *Murder* (1930) very important in that ‘they reveal Hitchcock’s earliest efforts to use aural techniques to convey a character’s

feelings' (Weis 1982: 28). However, these 'earliest efforts' often take the form of highly expressionistic effects (both visual and auditory). Since examples from *Murder* have been previously discussed (2.3.1.2.1.2, note 147; 2.3.1.2.2.2, note 153), we will here concentrate on one sequence taken from *Blackmail*, the 'knife sequence', and on a small excerpt taken from *The Thirty-Nine Steps* (1935).

In the 'knife sequence', it is not spatial signature and its corollary, reverberation that is exploited by Hitchcock, but rather sound editing and sound level. *Blackmail*'s heroine, Alice, has stabbed to death an overambitious artist. For the remainder of the film, she is therefore obsessed with her crime, and with the image of the knife. The 'knife sequence' is shown while Alice is eating breakfast with her parents. Elisabeth Weis (1982: 44) provides a detailed description of the sequence.

In the doorway leading from the breakfast parlor to the father's shop stands a gossip who is talking about the previous night's murder. [...] As the gossip's speech becomes more graphic, Hitchcock suggests Alice's increasing sensitivity by panning from the girl to the chattering neighbor: 'A good clean whack over the head with a brick is one thing. Something British about that. But knives—[the camera pans back to Alice] knives is not right. I must say I could never use a knife'. At this point the camera, having ended the pan on a medium-close shot of Alice, cuts to a close-up of her. Thus Hitchcock has already emphasized the word *knife* with his camera work, first by panning on the word to Alice, then by cutting in closer when the word is repeated. The gossip continues: 'Now mind you, a knife is a difficult thing to handle...'. From here on in her dialogue becomes almost abstract: it alternates between a blur of nonwords and the word *knife* five times. From offscreen the father says, "Alice, cut us a bit of bread, will you?" and the camera tilts down to Alice's hand approaching the knife (which looks just like the murder weapon). We hear *knife* five more times now, in the gossip's voice, at a fast pace, with the intermediate words eliminated. On the sixth repetition the word *knife* is screamed, and the actual knife seems to leap out of Alice's hand and fall to the plate.

Weis (p. 45) then summarises what she identifies as ‘a progression in the representation of Alice’s attention’:

At first Alice pays attention to the gossip speaking and hears words objectively. Then, while we still hear with her objectively, the word *knife* is emphasized through visual means. Next the word is selected from the rush of words until it is isolated from its context. Finally, Hitchcock increases the volume of the word to emphasize the subjectivity of the moment, still further matching the visual intensity of the close-up with the aural intensity of the loudness. The subjective sound in the knife sequence thus entails a combination of restricted hearing and distortion.

There are other sequences in *Blackmail* displaying particular uses of vocal staging, but this single example shows how powerful simple manipulation can be in the hands of a Hitchcock.¹⁶³ It is also interesting to see how early in sound cinema history such processes have appeared despite the fact that it was technically difficult at the time to obtain such effects. More importantly, the film’s relative success suggests that these effects were actually *understood* by the audience despite their novelty.

Hitchcock used a different expressionistic vocal staging effect in *The Thirty-Nine Steps* (1935), in which ‘a typical example occurs [...] just after a woman spy dies in Robert Donat’s room, revealing her secret mission to him with her last breath’ (Weis 1982: 74). Weis continues: ‘The woman has transferred to Donat both her knowledge and her paranoia. A triple repetition of her words and a superimposition of her face accompanies Donat’s realization that he cannot escape the burden of his new knowledge’. Here, it is echo that is

¹⁶³ For other descriptions of vocal staging practices in *Blackmail*, see, for example, Weis’ (1982: 50-52) discussion about the ‘laughter’ sequence occurring toward the end of the film.

used by Hitchcock, a figure that not only enhances the importance of the words themselves, but also their belonging to a 'past' to which Donat might well wish they return.

These expressionist effects are thus different from what we have been studying in the first section dealing with Châteauvert's categorisation because rather than depicting a particular case of discourse, they appear momentarily *within* a certain type of discourse (here the dialogue), so a shift of attention is produced: from the spy's words we shift to Donat's perception of them. We are still in a dialogue configuration but with a figure emphasising a character's standpoint and the effect the discourse has on him. A similar comment might be made about the 'knife sequence', in which it is Alice's perception that is depicted through the use of sound editing and variation of loudness. Again, it is a dialogue with a strong emphasis on a character's perception and, eventually, her resulting emotions. Of course, Hitchcock's filmography provides several more examples of the use of vocal staging. However, I wish to move to a more recent filmmaker mostly renowned for his poetic approach to cinema.

2.3.2.2. Andrei Tarkovsky: A Poetical Manipulation of Space

Andrea Truppin (1992) has presented many examples of Andrei Tarkovsky's creative use of sound. According to Truppin, Tarkovsky's poetics are mostly based on ambiguity, notably through the manipulation of spatial signature (see note 140 above for a definition). The following lines present three of the several illustrations commented on by Truppin.

The first example, taken from *Stalker* (1979), provides an illustration of what could be named 'audiovisual spatial discordance'.

On the journey to the mysterious Room, the cynical Writer must pass through a tunnel that, according to the Stalker, is dangerous. At first, the Writer's voice is flat as he speaks facing into the tunnel's entrance. Logically, the large, hollow metal tunnel would be an excellent echo chamber. Paradoxically, his voice becomes more reverberant when he speaks facing away from the tunnel's entrance. Fear overcoming his bravura, the Writer seems to begin to doubt his mockery of the Zone's alleged powers. This time, as he enters the tunnel, his now reverberant voice echoes clearly. The change in spatial signature seems to imply that the Writer himself is changing (Truppin 1992: 242).

Truppin (pp. 242-243) then presents an interesting use of vocal staging that, to my view, deserves a complete citation as well as an additional comment.

In *The Mirror* [1975], voice-off is used to create the character of Aleksei, who remains invisible throughout the film. Present only through his voice, he is visible, and by implication fully alive, only in representations of his memories and dreams of himself as a child. In the film's second scene, Aleksei speaks to his mother on the telephone. Their disembodied voices float through space as the camera tracks through the empty apartment. The spatial signature of Aleksei's voice suggests at first that he occupies the depicted space, as opposed to his mother's voice which bears the small and filtered frequency range of the intervening telephone line. But because the quality of Aleksei's voice never changes and we cannot place him visually as the camera successively reveals the empty rooms we do not sense that he truly occupies his large apartment. We cannot place his voice any more than hers, as if the nowhereness of a voice on the telephone corresponded to the nowhereness of his own voice, whose inconsequential spatial signature reveals its lack of connection to the world. The strained conversation ends when Aleksei's mother hangs up on him. Aleksei has just dreamt about her as a young woman, and we feel that this present reality of the phone conversation is less real than the dream/memory he has just experienced.

When relating this example to Châteauvert's categorisation, one can see that the ambiguity is mostly the result of the inadequacy between the vocal setting usually used for a dialogue

voice, and the flat voice usually characterising a voice over. Indeed, Aleksei's voice 'sounds' like a dialogue voice (bearing a specific spatial signature) when, in fact, it is a voice over.

In *The Sacrifice* (1986), Truppin (p. 244) has picked out an example reaching quite a high level of poetry and spirituality.

The whispering voice of Maria, formerly with little reverb in accordance with the sound space of her bedroom, seems to take on the characteristic reverb of a much larger, open space when the singing voice fades in. In a sense, Maria's voice borrows from the reverb of the second voice, connecting her with this voice on some plane that is not spatial. Simultaneous with the increase of reverb in Maria's voice, the image shows her bed, where she and Alexander embrace, rising and revolving. The voluminous folds of the trailing white sheets are reminiscent of Renaissance depictions of Christ on his bier. The image here symbolizes resurrection, and the movement of Maria's voice from one spatial signature to another through an increase in reverb suggests movement from one realm of experience to another. Of course, exaggerated reverb has traditionally been used to label the voice of God or to connote the spiritual realm in the Bible movie genre, but Maria's whispering voice alters only subtly and retains its modest place as only one of several voices.

One can see through these examples—and many others presented in Truppin's article—how powerful vocal staging can become. Whereas Tarkovsky's creative use of vocal staging—as well as numerous other visual and auditory strategies—is used for enhancing his highly poetical and spiritual approach to cinema, other filmmakers have applied vocal staging in order to evoke other situations difficult to present otherwise than in this particular form of expression.

2.3.2.3. Other Early Examples of Vocal Staging in Cinema

Early examples of particular vocal staging effects in cinema can be found in quite a high number of films. For example, Arthur Knight (1985: 216-217) provides a description of what can be heard and seen in a film by French filmmaker René Clair.

In *À nous la liberté* [1931], Clair goes so far as to kid the whole notion of synchronous sound by showing his heroine singing away at her window while the hero admires from afar. Suddenly something goes wrong with the voice—it whines and whirs, then fades away. A moment later, while the young fellow is still looking up at the window, the girl appears in the street, the song begins again and we discover that what we have been listening to all along is a phonograph record from another apartment.¹⁶⁴

Similarly, Knight (p. 219) reminds us that effects such as auditory flashbacks are far from being recent when commenting on a sequence taken from Rouben Mamoulian's second talking picture.

In *City Streets* [1931] a montage of china figurines is used symbolically over the clash of voices in one of the film's key dramatic scenes. Dialogue spoken earlier in the picture is heard again over a huge, tear-stained close-up of Sylvia Sydney as she recalls the past. Even as in Griffith's day, the producers protested that the public would never understand what was going on, that hearing a sound without seeing its source would only confuse the audience. Mamoulian stuck to his point, however; audiences did understand [...].¹⁶⁵

Finally, Marcel Martin (1985: 220) describes a more expressionistic effect found in Joseph Losey's *Time Without Pity* (1957) in which a character's drunkenness is depicted by having 'a

¹⁶⁴ For further discussion about René Clair's use of sound, see Gorbman 1976.

¹⁶⁵ See Fisher 1985 for additional comments on Mamoulian's use of sound.

kind of haze descend[ing] on the screen, blurring the character's image while his voice resonates as in a cathedral [...]'.¹⁶⁶

2.4. Summary

From what has been discussed in this chapter, it is possible to make the following observations: first, the narrative and, in the case of cinema and theatre, visual contexts are of primary importance for a particular 'meaning' to be attached to a corresponding particular vocal setting. In some of the examples discussed in the section devoted to cinema, spatial signature seems appropriate to the objectification of some 'inner' space (a character's imagination; drunkenness; etc.). In other instances, however, it can take on completely different meanings. For example, '[...] if the reverb level is high enough and the image slightly out of focus, the sound may even appear to have been collected in a *time* frame different from its production' (Altman 1992c: 25, my italics). In radio, because the voice is always acousmatic, added reverberation might be used to provide some contrast between discourses (for example, two aspects of a same character). In other words, it is not the reverberation itself that 'means' something; rather, it appears to be the conflict raised from the way the affected sound source actually sounds within the film/drama, compared to the way it *should* sound within the visualised/suggested environment. Second, and notwithstanding what has just been said, there seems to be quite a high degree of cohesion in regard to the use of effects like reverberation, sound level manipulation, filtering, etc. The remainder of this dissertation consists mainly in verifying to what extent such a cohesion also exists in the recorded popular music repertoire. Consequently, and since recorded popular

¹⁶⁶ '[...] une sorte de brume descend sur l'écran et rend floue l'image du personnage tandis que sa voix résonne comme dans une cathédrale [...]']

music constitutes our main domain of study, observations made directly on primary sources (i.e. recordings) will serve as a basis for the discussion.

Chapter 3

Vocal Staging in Early Recorded Popular Music

Rock music [...] reveals that listening to recorded music is a special idiom of everyday experience, with a complex set of conventions governing the presentation and apprehension of auditory events. Recorded music is a learned 'cultural form' that we usually take to be a mediated approximation to the direct experience. Especially in the case of rock music, the recorded form of the music has become the primary archetype.

(Kendall 1995a: 23)

3.0. Introduction: Aesthetics of Recorded Music¹⁶⁷

This dissertation concentrates mainly on vocal staging in recorded rock music from roughly the mid 1960s to 2000. But of course, and concomitantly to what was developed in radio, cinema and theatre, practices involving vocal staging occurred before the 1960s in recorded popular music. Therefore, this section presents some of these pioneering techniques that often led to later conventional settings. In order to do so, while a more or less historical approach is still adopted, some analysis made directly on the repertoire will emerge. But before we do so, we must look at some aspects of recorded music aesthetics.

¹⁶⁷ For enlightening discussions on the subject, see Clarke 1983; Moylan 1992: 77-89; Shea 1990: 58-66. For a more philosophical discussion around the ontology of the recorded musical 'work', see Fisher 1998.

Recorded music depends on technology to varying degrees: ‘the recording process can capture reality, or it can create [...] the illusion of a new world. Most recordists¹⁶⁸ find themselves moving about the vast area that separates these two extremes’ (Moylan 1992: 77). According to this criterion we can identify different aesthetic trends that have developed (often in parallel) during the course of music recording history. At one end we find a recording aesthetic that could be called *natural-realistic* and which seeks to ‘reproduce the original [performance] with as high a degree of fidelity as possible’ (Johnson 2000: 84). This aesthetic is usually associated with most recordings of classical music, or other styles of music favouring acoustic values rather than electric ones. William Moylan (1992: 82) specifies that the recordist adopting this aesthetic position ‘seeks to ensure that the sounds will be in the same spatial relationships as the live performance, the balance of the musical parts will not be altered by the recording process, and the quality of each sound source will be captured in a consistent manner’. At the other end of the recording aesthetic axis, we find a *full-technological* aesthetic trend that relies completely on technology and, at its extreme degree, does not depend at all on direct human musical performance. Furthermore, relationships between the sounds, and even sounds themselves, take on a definitive unreal character. One would find many instances of such an approach in works of computer or electroacoustic music or, for example, in most pieces of instrumental techno or industrial music.

Between these two extremes, we find recorded music that relies both on human performance and technological manipulation in varying degrees. Within the range

¹⁶⁸ The term designates any artist actively engaged in the recording process such as the audio engineer or the producer.

encompassed by this centred ‘artistic-technological’ aesthetic (Shea 1990: 5-6), one could distinguish two tendencies. The first one, which can be considered as an extension of the natural-realistic approach, aims ‘to create the *impression* that the recording could take place within reality’ (Moylan 1992: 83, my italics) by using some ‘unnatural’ recording techniques such as overdubbing or sound processing to a relatively low degree. The other one, tending toward the full-technological pole, uses the recording medium in order ‘to create the illusion of a performance that contains characteristics that cannot exist in nature. [...] In this [...] aesthetic, the recording medium is utilized for its own creative potentials’ (p. 83). This approach intensively exploits the creative possibilities of recording techniques such as use of multiple microphones, multi-tracking, sound processing, overdubbing, electronic sounds, etc., as dictated by the full-technological aesthetic, but still includes direct human performance to a significant degree (mainly vocals, but also humanly-driven instruments such as guitars, wind instruments, etc.). This aesthetic is mainly characterised by the creation of a ‘sound stage’,¹⁶⁹ which can be very different than our (aural) perception of the ‘real world’. For example, in a recording ‘a whisper of a vocalist might be significantly louder than a cymbal crash’, which tends toward the ‘unnatural’. Finally, both Shea (1990: 5-6) and Moylan (1992: 83) note that most of today’s popular music falls somewhere within the range encompassed by this artistic-technological recording aesthetics.¹⁷⁰

¹⁶⁹ Moylan (1992: 48) defines the sound stage as ‘the location within the perceived performance environment, where the sound sources appear to be sounding’ when listening to a recording.

¹⁷⁰ One could understandably believe that the ‘natural-realistic’ aesthetic trend has completely prevailed at the beginning of the recording era and that the ‘artistic-technological’ one has only started in the 1950s or 1960s. It rather seems that experimentation has been conducted in order to exploit the creative possibilities of the medium as early as in the late 1920s and early 1930s. This was notably the case with some jazz ensembles such as Duke Ellington’s, when Ellington was experimenting with stereo recording at about the same time as Stokowski in the early 1930s: ‘What is striking however is that unlike textually constrained art music performances the flexible jazz tradition enabled Ellington compose/arrange around the possibilities of stereo. [...] Whether or not these recordings were the outcome of a conscious attempt to produce stereo, or by-products of experimentation in LP recordings, they place Ellington at the centre of innovative recording technology, and with a distinctive interest in its “unnatural” possibilities. As early as the 1920s he was interested in applying electronics beyond enhancing “natural” results, to contributing to the acoustic content’ (Johnson 2000: 86).

By the 1950s, the whole of the popular music recording industry had quite generally adopted an artistic-technological aesthetic, most often tending toward the full-technological pole. Although this aesthetic orientation has led many authors to (rightly) consider audio recording as an artistic practice in its own right (Burns 1987: 3; Clarke 1983; Hennion and Latour 1996: 238-240; Moylan 1992; Shea 1990: 5), it seems that its adoption was originally not entirely motivated by artistic intentions.

The entrepreneurs, independent studio owners, and mixers who worked for [these same entrepreneurs and studio owners] did not have the resources in terms of studio facilities, musicians, and music to compete with the recording aesthetic of concert hall realism and high fidelity. However, their intended audience—lower class whites, blacks, and teen-agers—was neither expecting nor familiar with such an aesthetic. The music familiar to this audience was played in improvised acoustic environments: the music of roadside dance halls, small clubs, and high school gyms. [...] The solution to the problem provided an opportunity for the entrepreneurial collaborators to create, with the technology and the music available to them, a [...] recording aesthetic which would develop in this audience an appreciation of studio recording as aesthetically desirable in itself rather than as an attempted simulation of a live performance—all of which encouraged innovation in using the limited studio and artistic resources: the use of [artificial] echo and reverberation devices instead of cavernous studios, recording at loud volume levels, the use of novel microphone placements, electronically altering the acoustic sound's waveform, and various forms of tape editing in addition to the arrangements for music and new lyrics aimed at the lifestyle of its audience (Kealy 1979: 13).¹⁷¹

In any event, a number of vocal staging practices in recorded popular music have emerged since the 1930s (and apparently even earlier), and especially from the end of the 1940s in the context of the artistic-technological aesthetic trend just described.¹⁷²

¹⁷¹ We are of course facing a new reality today: first, listeners are more and more aware of whether a recording 'sounds good' or not. This increasing competency can be linked to the concept of a 'phonographic ear' proposed by French sociologist Antoine Hennion (1981: 156): 'L'oreille phonographique est devenue de plus en plus sensible aux composants du son, à la suite d'une véritable *discomorphose* de la musique : sonorités, correction des aigus et des graves, brillant des timbres; séparation des instruments, équilibre des intensités, espace sonore; écoutes fragmentées, à intensités variables, écoutes répétées d'une même exécution que le support a fixée; [...] multiplication des possibilités de choix, en musiques et en interprètes, découpage et répertoire beaucoup plus minutieux des genres...'. As an example of this growing hearing ability, Hennion (1981: 163) evokes the case of radio where listeners often hear extremely short excerpts of recordings during hit parade shows, nevertheless recognising almost instantaneously the songs from which the excerpts have been extracted. Second, at least from the mid-1960s production of an increasing number of popular music recordings must have been at least as expensive as other 'natural-realistic' recordings, mainly because of high costs of recording studio equipment. However, this is changing all over again, notably since the advent of very cheap digital recording facilities allowing almost any 'serious' recording artist to produce albums by her/himself. See also Middleton 1990: 89

¹⁷² For an account of the evolution of the use of technology in popular music from 1945 to 1964, see Shea 1990, especially pp. 66-103.

3.1. Vocal Staging Practices

3.1.1. *Artificial Reverberation and Echo*

3.1.1.1. Definitions

Echo and reverberation are effects that have been (and are still) widely used in recorded popular music. However, there is a widespread terminological confusion in popular music literature that the following sub-sections aim to clarify.¹⁷³

3.1.1.1.1. *Echo*

‘Echo’ is a term used to designate either an effect of sonic repetition or the electromechanical device producing such an effect (delay units, echo units, etc.). Although ‘echo’ and ‘reverberation’ (‘reverb’) are used interchangeably in many discussions concerning popular music, they refer to phenomena that are both physically and perceptually distinct. Echo is perceived as a *repetition* or partial repetition of the initial sound, and occurs when delay time between the original sound and its repetition is (roughly) larger than 50 milliseconds (Lacasse [2000a]; Schafer 1977: 130).

¹⁷³ Interestingly, John Hollander (1981: 1-5), although a literary scholar, provides a clear distinction between echo and reverberation in his book about poetry, and in which he studies echo as a poetic stylistic device. As suggested in the following sub-sections, many music scholars—who are supposed to use a precise vocabulary intended for their discipline—would be expected to adopt a similar degree of *rigueur* when describing sonic events. Of course, this is not to say that the words ‘echo’, ‘reverberation’ and ‘resonance’ should never be used as metaphors in everyday discussion; but popular music studies is at its early stages, and thus needs to develop a precise and critical vocabulary. In that effect, it is unfortunately too often necessary to go back to original recordings in order to gather proper information instead of relying on descriptions found in secondary sources. In this regard, Garry Tamlyn (1995: 8) rightly points out that ‘It is clear [...] that further musicological “donkey work” is required if we are to gain musically accurate and subsequently holistic understanding of the roots and development of rock’n’roll’.

In nature, echo can be heard in a number of contexts. For example, long echoes can sometimes be heard when yelling in mountains, on lakes or in certain caves. Indeed, ‘Mountains provide sufficiently distant reflecting surfaces, and caves sufficiently varied concave ones, so that echoes seem, as disembodied voices, to inhabit such regions’ (Hollander 1981: 1). Similar effects can be reproduced artificially using echo units with delay time varying roughly from 300 milliseconds to 2 seconds (and even longer)—*i.e. long enough for a significant part of a word or a phrase to be perceptually detached from its original utterance*. Such longer echo effects may involve one or more repetitions of the original sound. In other natural situations, shorter echoes with delays between roughly 50 to 150 milliseconds might be heard when a sound is, for example, produced ‘between a pair of plane-parallel reflecting surfaces. This is known as a flutter echo’ (Burd 1994: 113). The effect is perceived as a large number of short echoes bouncing around. Again, the effect can be artificially reproduced through a number of techniques. Some producers, such as Sam Phillips (3.1.1.2), have intensively used artificial short echoes (usually referred to as ‘slap-echo effects’) in their recordings.

3.1.1.1.2. Reverberation

Contrary to echo, reverberation is perceived as a *prolongation* of the initial sound. The reason this seems to be at the basis of the terminological confusion is that reverberation is *physically* composed of a large number of echoes (reflections). However, these reflections arrive so close together in time (delay time <50ms) and in so large a number that it becomes perceptually impossible to separate them (Burd 1994: 112; Lacasse [2000c]). The result is thus a prolongation of the initial sound that lasts a certain amount of time (reverberation

time).¹⁷⁴ According to Richard Elen (1994: 210), ‘Natural reverberation is caused by the interrelation of a large number of reflections produced in an acoustic environment’.

Consequently, reverberation is associated with the sonic characteristics of the environment in which a source is sounding. It is also possible to artificially create reverberation effects using various techniques:

[Reverberation] can be simulated with a large number of delays (and delay taps) or via sophisticated algorithms involving memory storage. [It] can also be simulated by large sheets of metal fitted with transducers, as in the EMT echoplate and its successors; by springs fitted similarly with transducers; and, of course, by rooms and chambers of various sizes, which is how it was originally done (Elen 1994: 210).

The next section offers a historic overview of some of these techniques and discusses some of their early uses.

3.1.1.2. Early Uses of Artificial Reverberation and Echo

3.1.1.2.1. Historical Overview

When recording a sound source in a room, it is obviously also possible to pick up the room’s natural reverberation. The level of reverberation is then increased simply by moving away the microphone from the sound source—which will, on the other hand, lead to a loss of definition of the source’s timbre—or by using rooms covered with highly reflective surfaces.

¹⁷⁴ William Moylan (1992: 16–17) provides the following definitions: ‘*Reverberant sound* is a composite of many reflections of the sound arriving at the receptor in close succession. The many reflections that comprise the reverberant sound are spaced so closely that the individual reflections cannot be perceived; the many reflections are therefore considered a single entity. As time progresses, these closely spaced reflections become even more closely spaced and of diminishing amplitude, until they are no longer of consequence. *Reverberant time* is the length of time required for the reflections to reach an amplitude level of 60 dB lower than that of the original sound source [...]’. See also Schafer (1977: 130).

However, the obvious limitations of such a 'natural' technique have led sound engineers to develop alternative methods for producing different kinds of reverberation and echo. The echo chamber was the first system to be developed in order to produce 'artificial' reverberation.¹⁷⁵ First used in early sound cinema and radio, an echo chamber consisted of a separate empty room with highly reflective walls.¹⁷⁶ Then, 'A microphone and loudspeaker [were] located in the room. The signal to be modified [was] fed to the loudspeaker and [was] picked up by the microphone after being modified by the room reverberation' (Goodfriend and Beaumont 1959: 228). Rudolf Arnheim (1936: 96-97) also provides a detailed description of a similar 'resonance room' used in German radio studios in the 1930s.

A number of variations of the echo chamber were later used in order to get different artificial reverb sounds by using alternative chambers, such as bathrooms (see 3.1.1.2.2 below) or even grain tanks.¹⁷⁷ Also, alternative systems have been developed in order to produce synthetic reverberation without having to rely on large echo chambers, which were costly and allowed only a quite limited range of effects. Goodfriend and Beaumont (1959) provide a description of early alternative reverberation units for which patents started to be issued as early as 1934. These early systems were mostly based on multiple echo devices. For example:

¹⁷⁵ The expression 'echo chamber' is thus in itself already confusing, since in most cases, effects produced with the device are (artificial) reverb sounds, not echo.

¹⁷⁶ For example, 'A room of 10,000 cu ft volume is capable of a reverberation time as long as ten seconds' (Goodfriend and Beaumont 1959: 228).

¹⁷⁷ This was notably the case with Duane Eddy's producer, Lee Hazlewood, who designed a quite interesting echo chamber around 1958: 'Hazlewood was obsessive about achieving new sounds, and this pursuit led to the installation of a gigantic grain tank onto the side of the building which housed the studio. The tank was outfitted with a mike and speaker setup, and became a truly monstrous echo chamber, heard to great effect on those early Eddy sides' (<http://www.smellslikerecords.com/artists/hazlewood/bio1.html>, visited 29 September 1999).

In 1941, S.K. Wolf demonstrated the first use of magnetic recording tape in a synthetic reverberation generator [...]. Erase and record heads were followed by 16 playback heads. The tape was a steel ribbon (Goodfriend and Beaumont 1959: 229).

Other reverb systems used springs, plates and even pipes.¹⁷⁸

3.1.1.2.2. Patti Page's 'Confess' (1948)¹⁷⁹

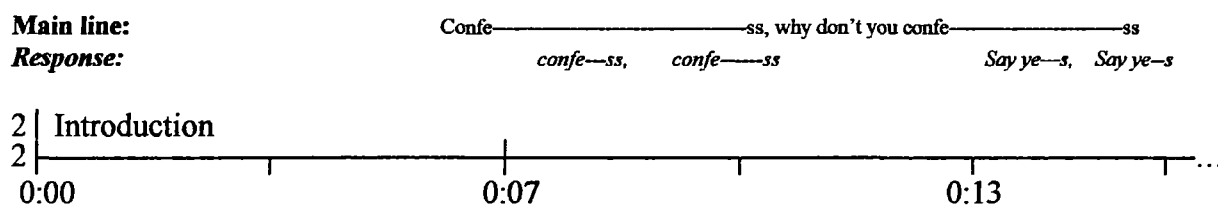
According to William Shea, common use of artificial reverberation in recorded popular music using echo chambers started in the late 1940s, notably with Patti Page's 'Confess (1948) in which 'Ms Page's voice was "sweetened" using a make-shift echo chamber. Page's vocal signal was transported via audio cable to a loudspeaker in the studio's very reverberant men's room. There a microphone picked up the reverberated sound [...]' (Shea 1990: 67-68). But apart from its technical and historical interest, the use of artificial reverb in that particular song is worth further analysis.

'Confess' displays a simple AABABA form, the A section consisting of a call and response structure in which each line is answered by a second overlapping voice (there is no answering line in the B section). Figure 3.1-1 below provides a graphic view of how the two voices alternate in the opening measures of the song (the diagram displays timings and the grid lines correspond to measures in a 2/2 time signature).

¹⁷⁸ I have found a rather funny example of an acoustic spring reverb system designed for children (and costing only one pound): the 'Echo Mike'. The device is made of plastic and incorporates a rather long metal spring. When the child speaks or sings in the device, his/her voice reverberates with a metallic sound.

¹⁷⁹ The song was recorded 3 December 1947, produced by Mitch Miller and engineered by Bob Fine.

Figure 3.1-1: Introductory measures of Patti Page's 'Confess' (1948)



The interest of this particular instance of call and response song lies in the fact that both the main line and the response are sung by Patti Page, which by itself constitutes one of the first official examples of overdubbing (see 3.1.2 below).

Furthermore, the response line displays reverb while the main line is 'flat'. Apart from simply helping distinguish the response line from the main one (intramusical relation), the added artificial reverberation might evoke some (extramusical) connotations to the listeners. For example, it is possible that the reverb brings a 'religious' connotation to some listeners, enhancing the metaphorical figure already exploited by the lyrics (confession).¹⁸⁰ On an even more abstract level, it is also possible that some listeners hear the reverberated voice as an inner thought expressed by the singer: even though it is the same voice that we are hearing, they overlap (which is not possible in the 'real' world) and sound as if they are in different environments, if not different worlds. This coincides with a suggestion made in the 1930s by sound engineer Rudolf Arnheim (1936: 104): 'The conversation between a man and himself could be very skilfully effected by the same man talking both parts, but with each voice coming from a different room: the voice of the tempter coming, perhaps, from a narrow

¹⁸⁰ The same kind of connotation is to be exploited just a few years later in songs such as the Orioles' 'Crying in the Chapel' (1953) in which there is a quite evocative reverb effect. See also results of the reception test in section 4.3.3.2 below.

cabin, and the warning voice of conscience from a resonant room'.¹⁸¹ Thus, in this particular song, reverb holds a potential evocative power that was subsequently exploited in future recordings in the course of popular music history. However, like many technological 'novelties', a number of producers at the time overused artificial reverberation to the point of deforming the voice-sound and making the words almost unintelligible.¹⁸² Others, on the other hand, seemed to have established new trends, notably through the use of specific sound effects such as the famous 1950s 'slap echo'.

3.1.1.2.3. Elvis Presley and the Rockabilly Sound

Sam Phillips is mostly known for his 'discovery' of Elvis Presley in 1954. As a sound engineer and producer, however, Phillips has strongly influenced the sound of 1950s rock'n'roll music. According to Greil Marcus (1982: 143), 'The best evidence of Sam Phillips' spirit is in the sound of the records. Each song is clear, direct, uncluttered, and blended into something coherent'. This sonic coherence, identified as the 'Sun Sound' (Unterberger 1997: 1104-1105), is notably established through the use of 'that famous echo,

¹⁸¹ This is also very close to comments about the radio drama *Foire aux vanités* discussed in section 2.1.1 above.

¹⁸² William Shea (1990: 67) writes that 'the use of artificial reverberation had to be watched closely (one of the biggest complaints of the critics was that it was not) or the effect muddled and obscured the performance, giving it a rough sound at best, an alien, unnatural sound at worst'. See also Shea's discussion about Teresa Brewer's 'Music, Music, Music' (1950) and Rosemary Clooney's 'Come On-a-My House' (1951) (Shea 1990: 88). Such excess, which was apparently present in radio's early days, is also condemned by Rudolph Arnheim (1936: 68-69): 'There is an occasional attempt at expressing the unreality of abstract voices by placing them far off. The sound certainly echoes very strongly then, as intended, but at the same time it comes not only from far away but also in a very earthly sense from behind, so that when the "earthly" speaker stands right in front, a dialogue, involuntarily comic in its futility, takes place from the front to the back and vice versa, instead of from the heavenly to the earthly. In such a case one must dematerialise the abstract voices by rather less primitive means'.

slapping back at the listener' (Marcus 1982: 143).¹⁸³ In fact, Sun made that echo 'the leading aural characteristic in the music' (Shea 1990: 79). Young Elvis Presley's voice was often staged with either a slap echo effect, such as in 'Baby Let's Play House' (1954), or with heavy reverberation, such as in 'You're a Heartbreaker' (1954). Escott and Hawkins (1980: 13) write that:

At Sun, Presley was recorded in exactly the same way as the R&B acts who passed through the door. Reverberation [slap echo?] was used to create a stark, lonesome and incisive sound [...].

Later, when Presley left Sun for RCA, a similar heavy reverb could be heard in his first national mega-hit, 'Heartbreak Hotel' (1956).¹⁸⁴ H. Stith Bennett reports a musician's impressions after hearing the latter recording.

How could you forget the sound of 'Heartbreak Hotel'?... The way the vocal just jumps out at you... When I first heard that it just drove me crazy—I couldn't figure out how you could get somebody's voice to sound like that; sorta eerie and hollow. I'd heard people talking about echo chambers, but at the time I couldn't imagine what that would be. All I knew was that sound just grabbed my ears every time (cited in Bennett 1980: 127).

¹⁸³ William Shea (1990: 79) argues that this 'reverberant rockabilly "sound" [...] would have an important impact on the aural quality of emerging Rock'n'Roll'. While Shea's work is of primary importance, two deficiencies are worth being mentioned here. Firstly, Shea rarely informs us about the dates of the recordings he provides as examples (the information is even lacking in the bibliography); secondly, and as illustrated by this preceding citation, Shea is constantly confusing *reverberation* with *echo*. Another example is to be found when he illustrates his argument with Presley's 'I Forgot To Remember To Forget' (1955) 'which combined Rhythm and Blues tunes with rockabilly instrumentation and very heavy reverberation' (Shea 1990: 99). In that particular recording, the effect heard is clearly Philip's slap-echo. In his defence, it has to be mentioned that this kind of confusion is widespread in popular music literature.

¹⁸⁴ Those heavy reverb effects, however, sound quite close to slap echo because of their very short decay time. Interestingly enough, it seems that sound engineers at RCA tried hard to imitate Sun's effects, ultimately ending up with this particular reverberation in the case of 'Heartbreak Hotel' (Morrison 1996: 68-69; Shea 1990: 99-100).

Richard Middleton (1990: 89) argues that:

Elvis Presley's early records, with their novel use of echo,¹⁸⁵ may have represented a watershed in the abandoning of attempts to reproduce live performance in favour of a specifically studio sound; but the effect is used largely to intensify an *old* pop characteristic—"star presence": Elvis becomes "larger than life".¹⁸⁶

In the case of Phillips' slap echo the effect was indeed so effective that it started to be used by other producers and engineers, and became so widely present that some musicologists have 'elevated' the effect to the status of an 'official' stylistic feature of early rock'n'roll music (Morrison 1996: 1, 22-23).¹⁸⁷ Besides numerous songs performed by Sun artists,¹⁸⁸ we can find countless examples of slap echo effects affecting the voice (as well as other sound sources, if not the whole mix) throughout the mid-1950s rockabilly and rock'n'roll repertoire.¹⁸⁹ The time's awareness of the widespread use of slap echo is notably attested by travesties and parodies such as Stan Freberg's hilarious parody of 'Heartbreak Hotel' (1956)

¹⁸⁵ Again, it is not perfectly clear whether Middleton has in mind 'echo' or 'reverberation', or even both—maybe using the term 'echo' in a general sense as it is often the case in popular music literature and discussions.

¹⁸⁶ According to what has been previously discussed in chapter 1, the idea of getting 'larger than life' indeed seems to have been part of human imagination for quite a long time...

¹⁸⁷ Escott and Hawkins (1980: 67) write that 'Presley [...] was the first white singer to be recorded at Sun with tape echo and he became so successful that the effect was to be used continually for the next few years. Malcolm Yelvington was the next artist to record after Presley made "That's All Right" and he remembers being introduced to echo by Phillips who stressed his liking for the eerie, faraway sound. "Sam took trouble to explain to me what he could do to my voice and at which points he wanted to raise it". There is also a more practical reason, "Echo was a good way to cover up the bad places in your voice". For a description of how Phillips produced the effect, see Morrison 1996: 22-23.

¹⁸⁸ The most famous examples of slap echo effects released by Sun, excluding Elvis Presley's, being Sonny Burgess' 'Red Headed Woman' (1956); Johnny Cash's 'Cry! Cry! Cry!' (1955), 'Folsom Prison Blues' (1955), 'Get Rhythm' (1956); Jerry Lee Lewis' 'Great Balls of Fire' (1957), 'Whole Lot of Shakin' Going On' (1957), 'High School Confidential' (1958); Roy Orbison's 'Ooby Dooby' (1956), 'Devil Doll' (1957); Carl Perkins' 'Everybody's Trying to Be My Baby' (1956), 'Matchbox' (1957); Billy Riley's 'Flying Saucer Rock and Roll' (1957), 'Red Hot' (1957); Ray Smith's 'Right Behind You Baby' (1958).

¹⁸⁹ For example, obvious slap echo effects can be heard on Joe Bennett's 'Black Slacks' (1957); Chuck Berry's 'Rock and Roll Music' (1957), 'School Day' (1957); Big Bopper's 'Chantilly Lace' (1958); Johnny Burnette's 'The Train Kept A-Rollin'' (1956); Sanford Clark's 'The Fool' (1956); Eddie Cochran's 'Sittin' In the Balcony' (1957), 'Jeannie Jeannie Jeannie' (1958); Buddy Holly's 'Blue Days' (1956), 'Rock Around With Ollie Vee' (1957), 'Midnight Shift' (1958), 'Thing-A-Ling' (1958); Gene Vincent's 'Be-Bop-a-Lula' (1956), 'Race With the Devil' (1956).

in which he complains that there is ‘too much echo’!¹⁹⁰ It is thus not surprising that this particular sound has now become a symbol for this era and is heard in many recordings which are referring to one aspect or another of this early style of rock music (see 5.3.1 below).

‘Intramusically’ speaking, slap echo added a kind of ‘excitement’ to the recordings, acting as a sort of rhythmic catalyser. Most of the time, the short echo’s delay was indeed rhythmically ‘tuned’ to the pulsation of the songs.¹⁹¹ This way, layers were added to the rhythmical texture, thus combining the echo’s rhythmic pattern to the one of the original performance. Craig Anderton (1985: 34) judiciously writes about a *synchro-sonic* feeling resulting from this rhythmical cohesion. This additional element of excitement was indeed compatible with the spirit of rockabilly music.

It seems, however, that similar short echo effects were already present in earlier recordings.¹⁹² For example, a slap echo effect on the voice is clearly audible in Les Paul and

¹⁹⁰ For a presentation of parody, travesty, and other intertextual practices in recorded popular music, see Lacasse 2000b.

¹⁹¹ Or the other way around, since it was quite difficult, at the time, to vary the echo’s delay. This is quite obvious, for example, in Jerry Lee Lewis’ ‘Lovin’ Up a Storm’ (1959) in which we can hear the drummer, J.M. Van Eaton, constantly trying to rhythmically synchronise his pulsation—mostly with the hi-hat— with the echo’s delay. Rhythmical aspects of echo are discussed in greater details in 5.3.1.2.

¹⁹² Although Craig Morrison (1996: 22) reminds us that Nick Tosches has already mentioned Wilf Carter’s ‘Sundown Blues’ (1935) and Eddy Arnold’s ‘Cattle Call’ (1944 [sic]) as early examples of echo (or reverberation?) heard in country music, I have to say that after having listened carefully to both recordings, none of them display any echo or reverb. In the case of Arnold’s ‘Cattle Call’, it has to be said that Arnold recorded at least five different versions of the song (1944; 1949; 1955; 1961; 1973; this does not include the duet version he recorded with Leann Rimes in 1996). Out of the five solo versions, three of them display reverberation (no echo): 1955, 1961 and 1973. In other words, it seems that Tosches (and by extension Morrison) has mixed up one of the later versions of the song with Arnold’s original rendering (I would like to thank Bill Comer from Orlando, Florida, for having kindly provided me with the six versions of the song). Similarly, Escott and Hawkins (1980: 67) mistakenly mention Arnold’s ‘Cattle Call’ as an example of early use of ‘echo’. As for Carter’s song, no effect whatsoever (reverberation or echo) was audible—at least in the case of the 1935 version mentioned by Tosches (thank this time to Neil V. Rosenberg, Memorial University of Newfoundland, for having sent me the recording). As far as mainstream popular music is concerned, it seems that the first popular recording incorporating artificial reverberation is the Harmonicats’ ‘Peg O’ My Heart’ (1947). However, there is no voice in that song, the Harmonicats being a band of harmonica players. See also 3.1.1.2.1 above concerning the early use of echo chambers in radio and cinema.

Mary Ford's classics 'How High the Moon' (1951) and 'Just One More Chance' (1951), predating by nearly three years Phillips' first use of the effect in 'Gospel Train' (1953) recorded in December 1953 by The Jones Brothers.¹⁹³ One could argue, then, that such recordings might have influenced people like Sam Phillips. In any event, it indeed seems that the idea of artificially modifying one's voice for aesthetic—or, as suggested by Middleton (1990: 88-89), 'political'—reasons through reverberation and echo was already present in the earliest stages of rock music. Nevertheless, there are other effects and techniques which were used early on in the history of popular music and which have been widely heard thereafter.

3.1.2. Overdubbing

3.1.2.1. Instrumental Overdubbing

In the early stages of audio recording, before magnetic tape was even available, overdubbing was performed with disc recorders. Apparently, Les Paul would be the first to use overdubbing in 1930 'by building up several guitar tracks on the outside and inside bands of an acetate disc' (Cunningham 1996: 21).¹⁹⁴ However, Les Paul's first commercial release

¹⁹³ The effect is also clearly present on Les Paul's guitar in many titles; for example in 'Nola' (1950). It also must be mentioned that recording dates for Les Paul's early recordings are not available 'because Les cut nearly all of them in his home studio or portable recording equipment while touring' (Shaughnessy 1993: 321). In fact, Les Paul apparently experimented with slap echo using a disk lathe as early as 1947 when he was looking for a real echo effect, different from the reverb effects produced with echo chambers: 'At the time, record companies relied on specially built reverberant rooms or simple tile bathrooms to fatten the sound of their disks. But Les, informed perhaps by Art Felthausen's earlier experiments with echo, figured out how to do it electronically. After several days of tinkering with his disk lathe, he determined that a one-tenth-of-a-second time delay [100 milliseconds] was a pleasing delay for an echo—not too long, not too short (Shaughnessy 1993: 139). Art Falthausen was a professional sound engineer who, as a friend, often helped Les Paul when dealing with more sophisticated equipment (Shaughnessy 1993: 116, 125).

¹⁹⁴ Mary Alice Shaughnessy (1993: 65) relates in which circumstances Paul's early experimentations with overdubbing would have been conducted: 'Always a night owl, [Les Paul] sometimes had trouble finding partners who were willing to come over and jam till dawn. Since over-the-counter [disk-cutting] lathes were impossibly expensive for his meager budget, Les built one of his own with the help of a few friends and taught himself how to overdub [...]. Now he could accompany himself at any hour of the day or night'.

including instrumental overdubbing was ‘Lover’ (1948; recorded in 1947), which was done by using two disc recorders.¹⁹⁵ Jazz musician Sidney Bechet previously released a recording in which he performed instrumental overdubbing in 1941. He used the same disc-to-disc technique as Paul and played multiple instruments in ‘The Sheik of Araby’ (1941) and ‘Blue of Bechet’ (1941) (Cunningham 1996: 21-22; Shaughnessy 1993: 140).

3.1.2.2. Vocal Overdubbing

According to Cunningham (1996: 21) and Shaughnessy (1993: 140), the first case of vocal overdubbing would be ‘The Cuban Song’ (1931), a feature song of the eponymous MGM musical movie, performed by opera singer Lawrence Tibbett (1896-1960) who would presumably have superimposed a harmonised vocal line on top of the original one. However, after having listened to the recording made on 28 October 1931 in New York, it is clear that there is no overdub: Tibbett simply sings his tune accompanied by pianist Stewart Wille.¹⁹⁶ It was thus not before 1947 that the process seemingly really started to be used with vocals. Indeed, and as suggested in section 3.1.1.2.2 above, Patti Page’s ‘Confess’ (1947) is considered as the first official example of vocal overdubbing.¹⁹⁷ Interestingly, the use of overdubbing in ‘Confess’ was not originally intended; rather, the process was adopted more

¹⁹⁵ Les Paul explains how he proceeded: ‘[...]I would record a rhythm track on the first disc, then I would play along with the rhythm track and lay the needle down on the second disc which would simultaneously record me playing along to my rhythm track. The second disc would now contain two guitar parts. Going back to the first machine, I would put the needle down onto the disc and record, say, a bass line along with the music from the second disc. Then for other instrumentation, I would just repeat the process, *ad infinitum*’ (cited in Cunningham 1996: 22). See also Shaughnessy 1993: 141.

¹⁹⁶ It might be possible, however, that Tibbett had released more than one version of the song, but such an eventuality seems quite unlikely. Alternatively, the overlapping effect could be present on the sound track from the movie in which the song was originally featuring: Van Dyke’s ‘The Cuban Love Song’ (1931). Unfortunately, I did not have the chance to watch (and listen to) the movie. The song’s version I have been listening to has been originally released on BVE 68328-2.

¹⁹⁷ The technique used for ‘Confess’ is similar to Paul’s technique. See a detailed description in Shea 1990: 68-69.

for economical reasons, in harmony with the origins of the artistic-technological aesthetic discussed in section 3.0 above.

There was just enough money to provide the George Barnes Trio for accompaniment, with none left over to hire another singer to provide ‘answers’ for Patti’s reading of the lyric, as the song required. [Page’s manager Jack] Rael came up with the positively inspired notion of having Patti answer herself, although many at first thought it technically impossible (Laredo 1991: [6]).

Patti Page then exploited and expanded the disc-to-disc overdubbing technique with ‘With My Eyes Wide Open I’m Dreaming’ (1949) which ‘featured Patti singing four part harmony with herself. The record’s label credited the vocal to “Patti Page, Patti Page, Patti Page and Patti Page”’ (Laredo 1991: [6]). Page’s next successful harmonised overdubbed renditions of ‘Tennessee Waltz’ (1950) and ‘Mockin’ Bird Hill’ (1951), along with Les Paul and Mary Ford’s versions of ‘Tennessee Waltz’ (1950), ‘Mockin’ Bird Hill’ (1951) and, especially, ‘How High the Moon’ (1951; recorded 1950), would provide a definitive starting point to this ‘new sound’ which started to get widespread. These years also witnessed the advent of tape multi-tracking—again developed by Les Paul around 1949 in collaboration with Ampex engineers (Cunningham 1996: 23-26; Shea 1990: 69-73)—which would pave the way to a number of multi-tracking techniques, including double-tracking.

3.1.3. Phasing Effects

3.1.3.0. Introduction

‘Phasing’ is here understood as a general term encompassing a number of distinct effects all concerned with variation of phase, and producing quite similar effects from a perceptual perspective. Perceptually, phasing effects can be summarised as ‘The timbral

coloration and combing associated with *constructive and destructive interference* of multiple delayed signals [...]’ (Kendall 1995b: 71). Among the techniques producing phasing effects we find mono double-tracking (including ADT, its electronic counterpart), flanging, revolving speakers (such as the famous Leslie speaker associated with the Hammond B-3000 series organ), etc. Phasing can also appear as a by-product of other effects, such as reverberation or echo (natural or electronically simulated). The following sub-sections trace the origins of some of these effects and discuss the impact they may have on listeners when applied to voice.

3.1.3.1. Mono Double-Tracking

Vocal double-tracking can be defined as the recording of two (almost) identical performances by the same singer through overdubbing (Borwick 1994: 594; Cunningham 1996: 361; Everett 1999: 316; Lewisohn 1990: 204). However, we should distinguish between two modes of double-tracking heard in the repertoire: mono and bilateral (stereo) double-tracking. In a stereophonic context, mono double-tracking consists of the placement of the two signals on the same location within the stereo array—usually front centre—allowing a better merging of the two performances.¹⁹⁸ This particular setting usually leads to a clear phasing effect, especially when the two signals are set at about the same sound level. The phasing effect then results from the fact that two *absolutely* identical performances are not possible: there will always be ‘micro-variations’ between the two merged signals thus giving rise to typical phasing effects (Anderton 1985: 22; Kendall 1995b: 71, 77-78). On the other hand, phasing effects are precisely possible because of the almost-identical timbre of both

¹⁹⁸ Of course, there is no alternative panning possible in a monophonic listening situation.

sources that allows wave-cancellation to occur.¹⁹⁹ As for bilateral double-tracking—that is, when the two signals are panned on either sides of the stereo array—phasing will still be partially present (depending on the listening situation), but the overall effect will be more felt as a spatial effect (see 3.2.2.2 below).²⁰⁰

According to Olivier Julien (1999: 360), Phil Spector would have been one of the first producers to perform instrumental double-tracking. As for vocals, Julien argues that Buddy Holly's 'Words of Love' (1957) would constitute the first example of vocal mono double-tracking.²⁰¹ Unfortunately, the effect is not that clear in Holly's song, especially because of the presence of a harmonised vocal line. On the other hand, the phasing effect resulting from the combination of double-tracking, harmonisation at the fifth, and the addition of echo, is clearly audible.

3.1.3.2. Automated Double-Tracking (ADT)

It is apparently Abbey Road sound engineer Ken Townsend who is responsible for the invention of Automated Double-Tracking (ADT) in 1966. The technique, developed by

¹⁹⁹ Similar effects may happen in 'real life' when two singers, sharing a very similar timbre, perform the same line in as synchronised a way as possible. The effect is even easier to produce with musical instruments, whose timbre spectra are usually less complex, thus easier to merge; for example, phasing effects are typical of a melodic line played by two, or even more, clarinets in an orchestra. Note that the closer the sound sources get in space, the stronger becomes the phasing.

²⁰⁰ Again, it is obvious that bilateral double-tracking will sound as a mono double-tracking in a monophonic listening situation.

²⁰¹ There is a possibility, however, that actual double-tracking had been performed earlier. For example, when listening to Les Paul and Mary Ford's 'How High the Moon' (1951), there is a phasing effect occurring from 1:29 to 1:52 apparently caused by (mono) double-tracking which would be the result of an overdub. Indeed, the excerpt sounds as if Mary Ford is doubling her line at unison while the rest of her performance is harmonised (again through overdubbing). If it is indeed the case, it must be said that Ford's vocal performance is very well synchronised, consonants sounding always at the same time, which also helps phasing to occur. The effect is also enhanced by the presence of echo which contributes to phase shifting. In fact, if double-tracking did indeed not cause the phasing effect heard on that particular recording, I would think that echo is responsible for it.

Townsend ‘during a Cilla Black session, allowed an existing lead vocal track to be duplicated out of phase, but with steady pitch, by a variable 24-30 milliseconds on a second tape machine during mixing’ (Everett 1999: 34).²⁰² ADT has been copiously used by the Beatles starting with the *Revolver* album, in which the effect is heard on thirteen of the fourteen titles. ADT being mostly used in stereophony, the original vocal track and its slightly delayed ‘double’ are panned left-right on the stereo axis. For this reason, and because the effect is perceptually very close to bilateral double-tracking, ADT will be considered as bilateral double-tracking for the remainder of this dissertation (see also 3.2.2.2 below).²⁰³

3.1.3.3. Flanging: ‘The Big Hurt’

The first case of a recorded flanging effect in popular music is most probably to be heard in Miss Toni Fisher’s ‘The Big Hurt’ (1959) (Elen 1991; Ridder and Beigel 1975; Shea 1990: 4).²⁰⁴ According to Ridder and Beigel, ‘The flanging effect was originally generated by using two tape machines deliberately unsynchronized to create a slight time delay between them; it was usually a frustrating trial and error procedure’ (see also White 1989: 64).²⁰⁵ According to Craig Anderton (1985: 11), the ideal delay range within which flanging can occur ‘extends from as short a delay as possible down to around 10 to 20 ms [...]’. Then, depending on the tuning, flanging either ‘imparts a whooshing, jet airplane-like effect to complex sounds [...]’ (p. 11), or ‘a zingy and metallic sound [...]’ (p. 12), the latter often

²⁰² See also Julien 1999: 361; Lewisohn 1990: 70.

²⁰³ Sometimes, however, ADT is used in mono, as in the Beatles’ ‘I Am the Walrus’ (1967b), which is by the way studied in 5.2.2 below.

²⁰⁴ Miss Toni Fisher died in February 1999. She was 70 years of age. Wayne Shanklin, author, composer and producer of the song, died in 1996.

²⁰⁵ Similar ‘analogue’ flanging effects were later performed by DJs using two vinyl copies of a same recording. According to former DJ Daniel Coulombe (Québec, Canada), it is possible to ‘control’ the flanging effect manually by varying the speed of turntables using one’s fingers (see also Anderton 1985: 11). Daniel Coulombe is notably responsible for the remix of *Party Mix* (1981) by the B-52s.

referred to as ‘combing’.²⁰⁶ In the case of Miss Toni Fisher’s ‘The Big Hurt’, we can hear the two effects in question affecting the whole mix.²⁰⁷ The first effect, which we will name ‘combing’, most probably results from having both tape machines playing the same original mix almost synchronously without varying the delay between the two. Then, the second effect, which sounds like a kind of ‘whooshing’ *wave*, must have been produced by manually modifying one machine’s speed in time by pressing against the flange of the tape reel (hence the name ‘flanging’), thus varying the delay between the two.

Contrary to the opinion that the flanging effect in Fisher’s ‘The Big Hurt’ was the result of some mistake (Elen 1991), it rather seems that it was deliberately produced.²⁰⁸ Indeed, a closer look at the effect shows that its development in time coincides significantly with structural elements of the song. Furthermore, the intensity of the effect varies in the course of the recording apparently also according to a planned pattern. Figure 3.1-2 presents a

²⁰⁶ For more details, see Anderton 1985: 11-14.

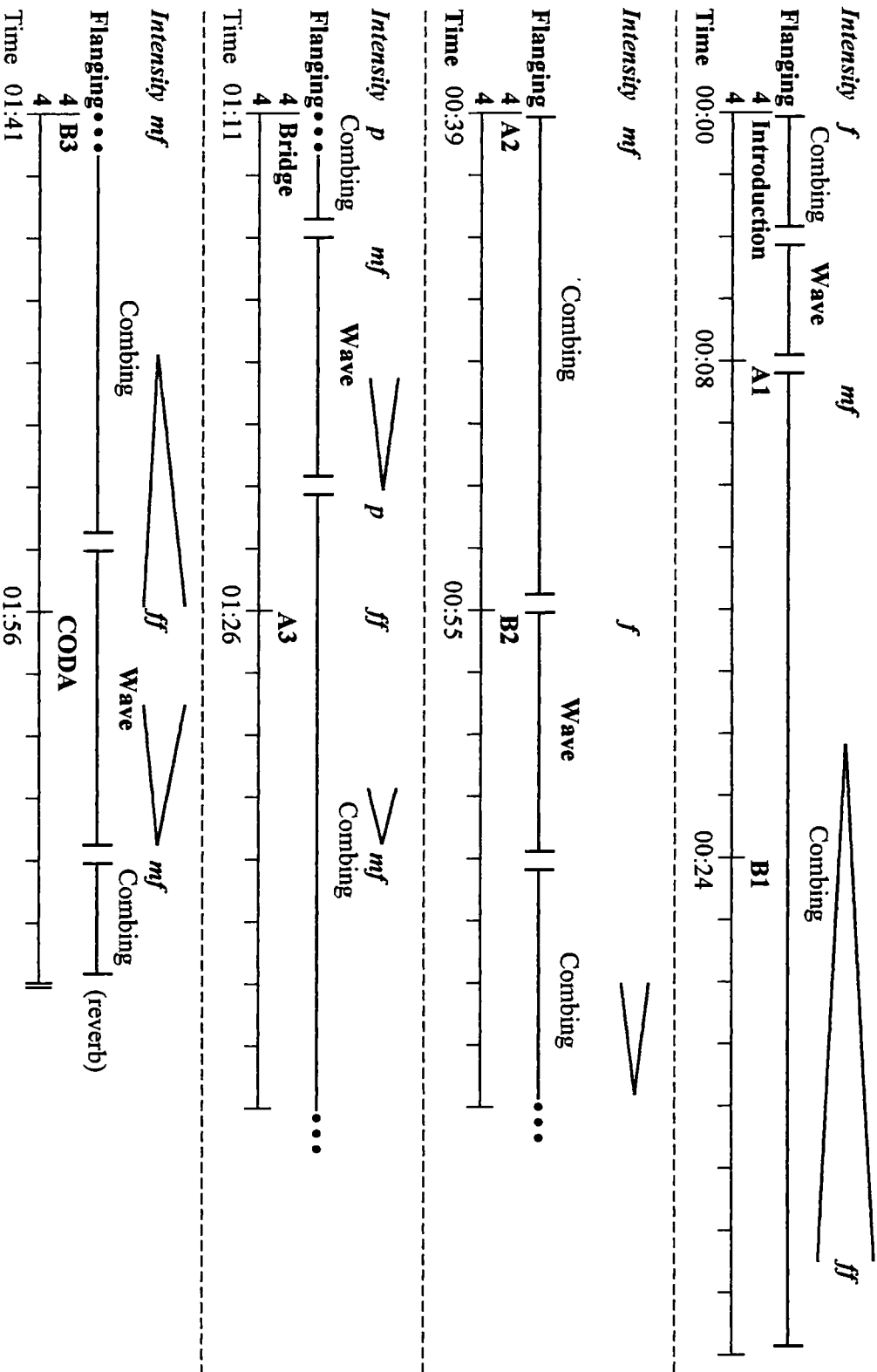
²⁰⁷ Since there were a limited number of available tracks at the time, flanging effects were usually affecting the whole mix rather than one sound source in particular.

²⁰⁸ Richard Elen (1991) writes that ‘the effect had been used on the soundtrack of a Fifties movie, *The Big Hurt*, but this was done by running two identical copies of a piece of music together and changing the speed of one of them to bring it into sync—a rather haphazard way of creating the effect’. However, in a recent email (received 20 September 1999), Elen writes that he was in fact referring to the song he *thought* was part of a movie, adding that his ‘sentence got edited strangely’. He adds that ‘In my mind, incidentally, I am quite certain [now] that the effect was intentional, even if it was done in a difficult to control fashion’.

graphic overview of the evolution of the effect in Toni Fisher's 'The Big Hurt', mostly in terms of the alternation between the effects of 'combing' and 'waving' just described.²⁰⁹

²⁰⁹ Dynamic values for intensity are given according to usual musical notation. The reader should consider these values as subjective estimations by the author.

Figure 3.1-2: Flanging Effects in Miss Toni Fisher's 'The Big Hurt' (1959)



Referring to Figure 3.1-2, we can see that the song starts with combing affecting the whole mix for two measures. Then, the first wave effect begins at the third measure, leading to the first measure of the first verse (A1), where a moderate combing effect is heard. Just before B1, the combing effect starts to increase in intensity until the second verse (A2) begins, where the effect decreases suddenly and stays moderate for the whole verse. A second wave effect is heard during the first four bars of B2, after which we come back to the combing effect.

During the beginning of the Bridge section, the effect is barely noticeable, until a wave starts to take form at the third bar. When the wave ends, we are back with a low effect until the third verse begins. It is at that moment that the combing is heard at a significant louder level, producing an effect of contrast with the preceding section. After, it decreases to a moderate level after four bars, and increases again just before the Coda, where the last wave effect is heard at high level.

Besides these formal considerations, it seems that the flanging effect has some impact on listeners, as demonstrated by this comment by a fan: “‘The Big Hurt’ was a big chart hit in the U.S., with the entire record using the effect throughout the length of the song, *making for a strange dreamlike atmosphere to go with the song lyrics*’.”²¹⁰ Indeed, the lyrics are about a break-up. More precisely, they express how the main character *feels* after the other one has left. This subjective perspective is thus propitious for the presence of an effect such as flanging, which seems to go well with inner turmoil, as demonstrated in section 5.2.1. This is not to say that flanging alone is responsible for the particular feeling described by the fan: other musical parameters, such as the unusual harmonic progression—displaying much chromaticism—surely participate to the creation of this ‘dreamlike atmosphere’. However,

²¹⁰ Found on <http://www.escriitoare.demon.co.uk/PSYCHFAQ.htm>. (Visited 21 September 1999, my italics).

the flanging effect certainly contributes to a large extent to the creation of this effect of ‘strangeness’, and should thus be considered an important feature of the song. Furthermore, and even though the effect is applied to the whole mix, the voice is considerably affected by the flanging effect, adding to the sense of fragility expressed by the singer’s performance. Quite interestingly, Stan Hawkins (1996: 25) makes a similar observation about Annie Lennox’s performance in ‘Money Can’t Buy It’ (1992) when, in the bridge section, flanging is added to Lennox’s voice: ‘In the next passage [...], the voice transforms into a pleading, innocent, vulnerable “little girl” voice, with the thin, flanged vocal timbres capturing the fragility and searching quality of the lyrics’.²¹¹

Strangely enough, it is only seven years later, in Del Shannon’s own version of ‘The Big Hurt’ (1966), that the effect was to be heard again.²¹² It is quite revealing that Shannon’s producer, Snuff Garrett, has taken the trouble to reproduce the flanging effect in Shannon’s version.²¹³ In fact, the effect is heard in two significant locations: right at the beginning of the last verse (A3) and during the Coda. Following Shannon’s use of the effect, flanging was soon to be heard in a number of songs and albums, such as Small Faces’ ‘Itchycoo Park’ (1967) which is widely (and wrongly) cited as the first example of use of flanging in rock music, Status Quo’s ‘Pictures of Matchstick Men’ (1968), and Jimi Hendrix’s *Electric Ladyland* (1968); but we are now encroaching on chapter 5.

²¹¹ See 5.2.1.2 below for more comments on that particular song.

²¹² For some reason, ‘The Big Hurt’ has been much covered from 1965 to 1967. For example, apart from Shannon’s version, we find renderings by Sandy Posey (1967), Scott Walker (1967), and even jazz guitarist Wes Montgomery (1971; recorded in 1965-1966).

²¹³ Garrett had notably produced hits by Johnny Burnette, Bobby Vee, Gene McDaniels and Gary Lewis (Dopson 1996: [3]).

3.1.4. Speed Modification

Among the vocal staging effects heard in early rock music recordings we find the presence of speed modification. The effect was produced simply by varying the speed of the tape machine or, as in the case of Les Paul's early instrumental recordings, the disc recorder. Indeed, in Les Paul's 'Lover' (1947) we can hear guitar lines sound at twice the normal speed.²¹⁴ In addition to the brightness brought by the acceleration, the effect might sound amusing for most listeners. As far as vocals are concerned, accelerated voices can be heard in a number of humorous songs, such as David Seville's 'Witch Doctor' (1958), in which the doctor in question has a thin accelerated voice when he utters his magic formula 'Hoo Hi Hoo Ha Ha, Ting Tang Walla Walla Bing Bang' in order to help his patient seduce the coveted woman. In Sheb Wooley's 'The Purple People Eater' (1958), the narrator explains how an extraterrestrial creature's voice appeared 'so rough' to him when, with an accelerated voice, the 'thing' told him 'I wouldn't eat you 'cause you are so tough'. Similar use of the accelerated voice is present in The Coasters' 'Little Egypt' (1961), where the effect illustrates the voices of the narrator's children who try to imitate their mother. The same effect is used for the little men playing bowling in the Devotion's 'Rip Van Winkle' (1964) and in Napoleon XIV's 'They're Coming to Take Me Away, Ha-Haaa!' (1966), the latter using accelerated voice in conjunction with other effects (such as flutter echo) to illustrate the madness that starts to overcome the narrator.²¹⁵ Concomitant to all these effects, and following experimentations conducted in the late 1920s, a major breakthrough occurred toward the late 1950s: the widespread use of stereophony.

²¹⁴ Les Paul was apparently also using decelerated guitar sounds for the bass parts.

²¹⁵ Similar effects are to be heard later, notably in Thomas Dolby's 'Hyperactive' (1984).

3.2. The Advent of Stereophony

3.2.1. Historical Overview

While French engineer Clément Ader (1841-1925) is known as one of the ‘fathers of air travel’ (he was notably the first to fly with a machine heavier than air, the *Eole*, on 9 October 1890), he is probably the first one to have realised a true stereo telephonic transmission in 1881 at the Paris Exhibition of Electricity. Later in the 1920s, Harry Wier and W. Barlett Jones proposed ways of *recording* two channels of sound, the former with the help of a double-groove cylinder, the latter with a double-groove disc (Fox 1982: 36). Then, what is usually acknowledged today as the first high fidelity stereo recording was made ‘during a concert of Russian music given by Stokowski on March 12, 1932 [sic]. The Bell Lab engineers were present and recorded two short extracts from Scriabin’s *Poem of Fire*’ (Fox 1982: 37). However, Bruce Johnson (2000: 85-86) reminds us of the following:

Stokowski’s early essays in stereo recording were just one example of continuing experimentation by RCA Victor in the United States and HMV in England from 1929, which included stereophonic recordings of the BBC Symphony Orchestra under Elgar and the D’Oyly Carte Company, but also popular and jazz repertoire from Leo Reisman, Paul Whiteman, Hoagy Carmichael, Fred Waring’s Pennsylvanians, Gertrude Lawrence, Noel Coward, and, a couple of months before Stokowski’s stereo recordings, Duke Ellington.

Even though such experimentations were conducted in the early 1930s, stereophonic reproduction systems only began to see widespread use in the late 1950s. This new way of presenting sound to the listeners led artists of the time to initiate vocal staging effects related to the spatial expansion offered by stereophony.

3.2.2. Impact on Spatial Acoustic Imagery

3.2.2.1. Stereo Localisation

In most rock music recordings, the lead vocal line is usually panned centre and mixed louder than the other sound sources. This particular setting has been termed ‘monocentric panning’ by Philip Tagg (1991: 60).

This not only implies that the singer is, as usual, the central ‘reference point’ of the piece but also that she has had her mouth placed nearer the listener’s ear, not only by proximity to the recording mike but also by the relative volume accorded to the main vocal channel(s) in the final mix. This technique creates an actual or imagined distance between two persons (the singer and the listener) which is that of an intimate and confidential monologue (or potential dialogue).

Moreover, one could argue that a voice panned centre front within a stereophonic mix sounds even ‘more’ centred than within a mono mix, because of the contrast created by the voice’s centeredness *versus* the relative stereophonic spread of the accompaniment.²¹⁶

This importance given to the human voice is apparently coherent with what is found in ‘natural’ situations. For example, when calling someone’s name, the person called will turn his/her head in order to ‘fix’ the sound source in the middle of his/her stereophonic hearing array. Furthermore, the potential receiver will start to focus his/her auditory attention towards the emitter, leaving the rest of the sonic environment in the background (Wood 1984: 21-22). To reproduce such a pattern within an audio representational system, however, is to *propose* a

²¹⁶ On the other hand, it could be argued that a voice panned, say, full left can draw more attention than if it was at the centre because of the destabilisation produced by the effect. Again, it is a question of *contrast*, mostly between what is *usually* experienced or represented, and what is *occasionally* represented. An example of such a contrasting effect is presented in 5.1.2.2 below.

configuration implying that the listener actually *wants* to concentrate his/her attention on the singer's voice. It thus demonstrates the importance granted to human vocal expression in rock music—as in most western musical styles anyway—which indeed seems to confirm the melody/accompaniment dualism brought forward by Tagg.²¹⁷ A formal and ideological parallel can also be drawn between Tagg's monocentric panning and Marcelin Pleynet's 'monocular perspective' in painting: 'Take a man sitting in the dark looking at an image and which, identifying with it, is forced to accept what bourgeois society has always offered him, namely never to act except by proxy' (cited in Augst 1976: 97). We could then paraphrase Bertrand Augst (1976: 98) and argue that most sound recordings are based on the principle of a fixed point in relation to which the objects heard are organized, and that, consequently, monocentric panning circumscribes the position of the subject.

Despite the widespread practice of centring the leading voice, it is possible to find numerous examples of voice panned at one or other side of the stereo array, especially during the 1960s when artistic experimentation, boosted by technological developments, was more common. It is important, however, to note that one of these technological developments is intimately linked with stereophonic experimentation: multi-tracking. In the 1930s, stereo recordings were mainly dealing with various placements of the instruments (see Johnson 2000: 86). A recording session would happen in real time within a given spatial environment.

²¹⁷ Actually, a mix could be considered as a proposed pattern of subjective attention. For example, to bring at one point in the course of a song a guitar solo louder and at the centre means 'please, listen now to this brilliant guitar line'. This conception can easily be related to Rick Altman's 'foreground-background sound' as presented by Andrea Truppin (1992: 270, note 1): 'In a foreground-background sound system [...], one voice or sound plane predominates, while other sounds blend together into a generic audible fabric that may have specific meaning, but does not command our primary attention. This type of sound can be likened to a musical composition in which the primary melodic line of a single instrument's voice is supported by orchestral chordal structures'. As one can see, this particular topic could lead to a quite extensive study. See section 5.0.2.1 on primary and secondary musical materials. See also section 2.0.1 above, especially note 103; Williams 1980: 61-63.

Consequently, even though some artists were experimenting with ‘unnatural’ placements—for example, Duke Ellington—most of these early attempts were nevertheless conducted according to the natural-realistic aesthetic described in section 3.0 above. Early stereophony was thus a quite fixed practice: we were listening to a particular spatial configuration proposed by the recordist that was more or less replicable in ‘reality’.²¹⁸ With the advent of multi-tracking, it then became possible to isolate the sound sources, allowing the recordist to assign them specific settings. Furthermore, it became possible to make such manipulations *after* the recording was made (during the mix down), allowing for multiple essays without destroying the original takes.

However, early multi-track machines had a limited number of tracks, requiring the recordist to group together a number of sound sources. Allan Moore (1997: 24) gives the example of stereo mixes of the Beatles’ *Sgt. Pepper*.

Stereo was still a new development, and although all their songs were mixed in mono with great attention, the band were happy to allow George Martin free rein with the stereo mix. This did not create as much leeway as it might sound: in mixing from only four tracks, there is often little choice as to where to place and balance particular sounds.

Then, in a four-track situation, it was common to have the full drums and the bass on one track, the guitars on a second track, the lead vocals on a third, maybe leaving the fourth one for overdubs (guitar solos or back vocals for example) or for the recording of sound effects. That might explain why some stereo rock recordings done in the early days of multi-tracking

²¹⁸ It is by no mean intended to diminish the importance of Ellington’s early exploration of stereo. The point is that the technology available at the time only allowed the artists to experiment within certain limits.

have the drums and bass panned full left with, say, the rest of the mix on the right.²¹⁹ Later, when 16 and 24-track machines became available, control over discrete sound sources became possible and a number of conventional settings, most of which are still in usage today, started to emerge.²²⁰

3.2.2.2. Stereo Images

Effects such as bilateral double-tracking or stereo phasing often give rise to by-product effects related to the perceived stereo image of the sound source. In the case of bilateral double-tracking, the voice is perceived as being simultaneously coming from two point sources located on the left and right sides of the stereo array. On the other hand, effects such as stereo chorus (or even stereo reverberation) can make the voice sound as if it was occupying a more or less large area of the sound stage. See 5.1.2 for more detailed definitions and examples.

²¹⁹ For example, we find two typical stereophonic configurations in Del Shannon's album *This Is My Bag* (1966). A first one, used for most of the titles, places all the instruments in the middle, with the voice panned far left *and/or* far right. This configuration is found, for example, on 'For a Little While', 'Lightnin' Strikes', 'When You Walk In the Room'. Another configuration is found on 'Under My Thumb' (Shannon's version of the Rolling Stones' classic) in which bass, drums and second guitar are panned left; marimba and main guitar are on the right, while the voice is centred.

²²⁰ For a quite long time now, kick and snare are almost always panned centre: 'To make full use of both stereo channels to maximize drum punch, it is conventional in rock to spread the drums out symmetrically around a centred kick and snare' (Wadhams 1990: 302). Interestingly, however, some aesthetic divergences continue to exist regarding the placement of other components of the drum set, especially the hi-hat. Indeed, some recordists will prefer to present the drums as if the listener was *in front* of the instrument, in which case the hi-hat is panned right. Another aesthetic trend will rather suggest panning the hi-hat on the left-hand side, as if the listener was seated on the drummer's stool. For the purpose of this example, it is of course assumed that the drummer is right-handed, thus placing his/her hi-hat on his/her left...

3.3. Summary

Thus far we have seen that vocal staging has increasingly become an integral part of the aesthetics of artistic disciplines relying mostly or exclusively on electric amplification or recording. The reason for this is quite simple: it becomes much easier to control and to exploit vocal staging through tools developed in the recording studio resulting from electrical technology than to erect, for instance, a number of buildings displaying specific environmental characteristics. Although vocal staging is not a recent practice, it is nevertheless true that electricity has allowed a much more systematic approach to the phenomenon, as well as permitted the creation of new effects. Not only are these effects increasingly widespread and, more importantly, better controlled, but they also have an indubitable effect on listeners: '[...] technological distortion of voice-sound (through use of a vocoder, for example) is [...] disturbing [...]' (Middleton 1990: 262). The next chapter therefore presents the results of a reception test aiming at documenting the extent to which 'technological distortion' and other phenomena produce other effects on listeners.

Chapter 4

Intersubjective Interpretation of Vocal Staging: A Reception Test

[...] it is above all the kinds of *sound* with which we have become familiar that define the music culture we live in.

(Middleton 1990: 88)

4.0. Introduction

4.0.1. Presentation

Before we undertake a more systematical analysis of examples found in the rock repertoire (chapter 5), it has been felt necessary to have access to a set of data coming from empirical experimentation conducted with a group of listeners. Accordingly, this chapter presents the results of a reception test that attempts to identify effects and connotations that subjects attach to some electrical vocal settings such as reverberation, echo, flanging, and others, when applied to voice. Of course, it is not our contention that this test provides definitive and immutable results. Rather, such results should be considered as *clues*, as possible *tendencies* within a certain context. Consequently, rather than presenting these results in isolation and for their own sake, they will be simply considered and used as *additional* elements to observations made directly on the repertoire as presented in

chapter 5.²²¹ Indeed, most studies of the impact of popular music have neglected this aspect, and it is partly to avoid this omission that this chapter presents the result of such a test whose main aim is to provide a glimpse of the potential expressive power of vocal staging from a cognitive perspective.²²² However, it would be out of the scope of this study to undertake a thorough epistemological discussion regarding how such data should be collected: this would constitute the topic of an entire new project. The idea is more to gather some empirical evidence to support the hypothesis that vocal staging can potentially orientate listener perception, and thus arouse a number of effects and connotations.

4.0.2. Issues and Method

The main objective of the test was to identify some extramusical significations (connotations) which are likely to be conveyed by particular vocal staging effects (vocal settings) as perceived by the rock audience. The method used to ‘measure’ these connotations was Charles Osgood’s semantic differential (Osgood *et al.* 1957). This technique was developed in order to measure connotative aspects of meaning for different concepts, a concept being defined as a stimulus against which subjects are asked to react during an experiment. Usually, the measured concepts are words; but we also find many studies dealing with other kinds of concepts, such as abstract paintings (Tucker 1955), film music (Sirius and Clarke 1994), prose style (Carroll 1969), camera angles (Baggaley and Duck 1976: 78-108), and even sonar sounds (Solomon 1958). In the present situation, the measured concepts were a series of particular vocal settings. Subjects were asked to indicate their reaction by ticking

²²¹ As a matter of fact, we have already referred partially to this test in previous sections.

²²² For an extensive analytical study of music for the media which includes reception tests, see Tagg and Clarida 2000.

choices on a form presenting pairs of opposite words facing each other along bipolar scales (see 4.1.2 for a detailed presentation of scales).

Besides general epistemological issues already discussed in the General Introduction (0.4), there are some more specific methodological problems I would like now to address. A first problem is related to the fact that Osgood's method is a multiple choice one, and therefore might 'restrict listener response options' (Tagg and Clarida 2000). A way to circumvent such a problem would have been to choose a free inductive approach, letting subjects write whatever they felt when hearing the sound examples.²²³ However, and as already stated, this test does not aim to propose definitive answers to our problem. It rather should be considered as a source of some empirical data that could support observations made during analysis of recordings. To adopt a free inductive method would have meant a much larger amount of time devoted to the analysis of results, which was far beyond the scope of this research.²²⁴

A second problem is related to the particular nature of vocal settings as an object of empirical study, particularly when one wishes to submit such an object directly to listeners. First, due to all kinds of masking effects,²²⁵ and due to the various changes of texture occurring in time in most rock songs, it is very difficult to find isolated excerpts from rock

²²³ In fact, there was free space provided on the form to indicate additional words that the subjects would have felt representative of the setting they were exposed to (see Appendix 2). Since subjects proposed very few additional words, it has been decided not to include them in the results.

²²⁴ For example, while Tagg and Clarida (2000) have used a free induction approach, it was in the context of a much larger study which has been described as follows: 'Mammoth research work into the interpretation of musical messages in the mass media. Includes thousands of music examples, extensive empirical detail of musical perception, full discussion of relationships between musical 'signifiers' and 'signifieds' (800 pages)' (<http://www.mmmmsp.com/>. Visited 20 March 2000).

²²⁵ 'Masking occurs when a sound is not perceived because of the qualities of another sound. The simultaneous sounding of two or more sounds can cause a sound of lower loudness level, or a sound of more simple spectral content, to be masked or hidden from the listener's perception' (Moylan 1992: 32).

recordings in which we hear voice alone presented in particular settings, and which last for a satisfactory length of time.²²⁶ Thus, it has become necessary to *design* sound excerpts to be assessed by listeners. Ideally, the researcher would prefer to present listeners with vocal settings sounding by themselves, which is obviously impossible: how can we hear flanging or panning on its own? By definition a particular setting *affects* something, *interacts* with something—in this case, with the voice. So, how is it possible to ‘isolate’ a particular setting from its sound source?²²⁷

William Moylan (1992: 228) argues that a setting is isolated by listeners in a process of comparison between their memory of the original sound characteristics and the ones displayed by the same sound source once affected by the setting. For this reason, it has been decided to expose the subjects to recordings of the same original sound source presented in a

²²⁶ However, there are some few examples, such as ‘Your House’ (1995), a hidden track on Alanis Morissette’s *Jagged Little Pill* which is located at the very end of the record (track 13; 5:12) and in which Morissette sings *a cappella* with considerable reverberation; or in Suzanne Vega’s ‘Tom’s Diner’ (1987) where reverberation level is quite low, yet perceptible. See 5.1.1.2.1.1 below for further discussion about these two songs.

²²⁷ We acknowledge that there are other general problems related to this kind of experiment. For example, it does not take into consideration the subject’s behaviour when hearing such sound objects in a ‘real life’ situation. On the other hand, it circumvents a number of other problems among which some have been identified by Michel Thion (1991: 51): ‘toutes les approches constatées, tous les tests effectués, toutes les analyses opérées [...] le sont sur une frange extraordinairement étroite de la musique. En gros, quelques extraits de la musique savante de l’Europe occidentale, de la deuxième moitié du XIXe siècle et du tout début du XXe. Par ailleurs, on ne dispose d’absolument aucune donnée sur les origines socio-culturelles des sujets des tests. Encore moins sur leur état psychologique au moment du test. Aucune procédure d’étalonnage n’est proposée’. In any case, and as stated earlier, this test aims at providing additional *clues* rather than a final solution to our problem.

number of different settings. This way, the only varying elements were the particular settings aimed to be measured.²²⁸ On the other hand, Moylan (1992: 228) warns us of the following:

If the listener does not recognise the timbre, or has no prior knowledge of the sound source, he or she will be at a disadvantage when calculating the characteristics of the [setting]. There will be no point of reference for determining how the [setting] has altered [...] the original sound source.

In this case it is not very much of a problem, since sound of voice is certainly the most recognisable sound for human beings. Moreover, in the context of this study, it is not minute changes which were evaluated but rather quite noticeable modifications. In any case, in this particular test, subjects have been exposed to the original ‘unmodified’ sound excerpt before making their judgements. Description of the original sound source and the settings are presented in the next section, along with a description of the intersubjective measuring instrument.

²²⁸ Albert Bregman (1990: 2-3) provides a simple example of such comparison which might happen in ‘real’ life: ‘A friend’s voice has the same perceived timbre in a quiet room as at a cocktail party. Yet at the party, the set of frequency components arising from that voice is mixed at the listener’s ear with frequency components from other sources. The total spectrum of energy that reaches the ear may be quite different in different environments. To recognize the unique timbre of the voice we have to isolate the frequency components that are responsible for it from others that are present at the same time. A wrong choice of frequency components would change the perceived timbre of the voice. The fact that we can usually recognize the timbre implies that we regularly choose the right components in different contexts’. Furthermore, ‘Results of experiments and of informal observations show that separate pitches, timbres (e.g., perceived roughness), vowel identities, and even locations can be computed separately on the streams created by scene analysis. If this were not possible we would be able to hear only one sound at a time and the qualities of that sound would always represent the sum of all ongoing events’ (Bregman 1990: 662).

4.1. Instrument Construction

4.1.1. Selection of Concepts

As stated earlier (4.0.2 above), in Osgood's terminology the term 'concept' refers to the stimulus to which subjects are asked to react during an experiment. The concepts presented to subjects were a series of eight sound excerpts of about 2:30 min. each. Each sound excerpt consisted of a particular presentation (setting) of a single original recording of a female artist reading an excerpt from Honoré de Balzac's *Le père Goriot* (Balzac 1835: 7-9). For the purpose of the study, it was assumed that a speaking voice reading a text without much emotive content could be considered 'neutral'.²²⁹ Then, it was further assumed that by varying the settings, it would be possible for listeners to focus on the settings, and thus would make possible the desired assessment procedure to take place.

The sound excerpts were played back using a Portable Minidisc Recorder (Sony MZ-R3) and heard through a standard stereophonic system. The text was recorded and edited in a professional sound studio using a number of audio signal processors. The vocal settings have been presented in the following order: 1) voice with Reverberation; 2) voice with Distortion; 3) voice with Flanging; 4) voice with Echo; 5) Normal voice, 6) voice with Telephone effect; 7) voice with Slap Echo; and 8) voice with Harmoniser. The Normal setting consisted of the voice reproduced without reverberation (flat voice) and with minor standard equalisation adjustments. Reverberation was produced using a Lexicon PCM-70 unit ('Rich Chamber', reverberation time=1.6 sec.). The same processor was used for Echo (Delay time=350 ms; 3

²²⁹ Even though I acknowledge that the notion of a 'neutral' voice raises problems (for example, the very fact of recording a voice, despite all the care we can take, already leads to some kind of modification of the voice—see 2.0.1 above), we have to start somewhere.

repetitions) and Slap Echo (Delay time=50 ms; 1 repetition). Harmoniser (a fifth below), Flanging, Distortion, and Telephone²³⁰ effects were produced using a Zoom Advance Signal Processor 9010 unit.²³¹ Selection and tuning of these particular settings were based on the following factors: 1) the settings and their tuning had to correspond to what can be heard in the rock repertoire; 2) the spoken words had to remain intelligible; 3) the availability of the hardware equipment. Finally, the duration of 2:30 min. for each excerpt was chosen assuming that it would be sufficient for the subjects to complete their judgements.²³²

4.1.2. Selection of Scales

At the basis of semantic differential we find the bipolar scale. Each scale presents a pair of opposite adjectives separated by a line. The line between the two poles is segmented into seven divisions rated from -3 to +3. The subject indicates the position which best represents the measured concept: a score of -3 indicates that the adjective to the left end is 'very much' representative of the concept, while a score of +2 means that the adjective to the right end is 'quite' representative of the concept. A score of zero denotes that both adjectives are inappropriate for judging the current concept. The main criterion for the selection of adjectives was their relevance to the concepts being judged. Most of the adjectives have been selected from personal experience, such as conversations with other musicians. I have tried to identify pairs of adjective that could be used for describing settings. As a second criterion, I have tried to select scales that have been used in previous studies. It is quite probable, though,

²³⁰ Obviously, the term Telephone refers to the sound of voice when heard through a telephone. In practice, such effect consists in cutting high and low frequencies and boosting mid frequencies.

²³¹ I would like to thank Daniel Coulombe (Capture Digitale, Québec) for having provided access to his studio at very low costs.

²³² Actually, 2:30 min. appeared to be too long, most of the subjects having completed their task usually after 1:30 min.

that some appropriate scales have been overlooked in the selection process. This, of course, is a question that should be investigated in further studies. The form used during the test is presented in Appendix 2.

4.2. Sample and Procedure

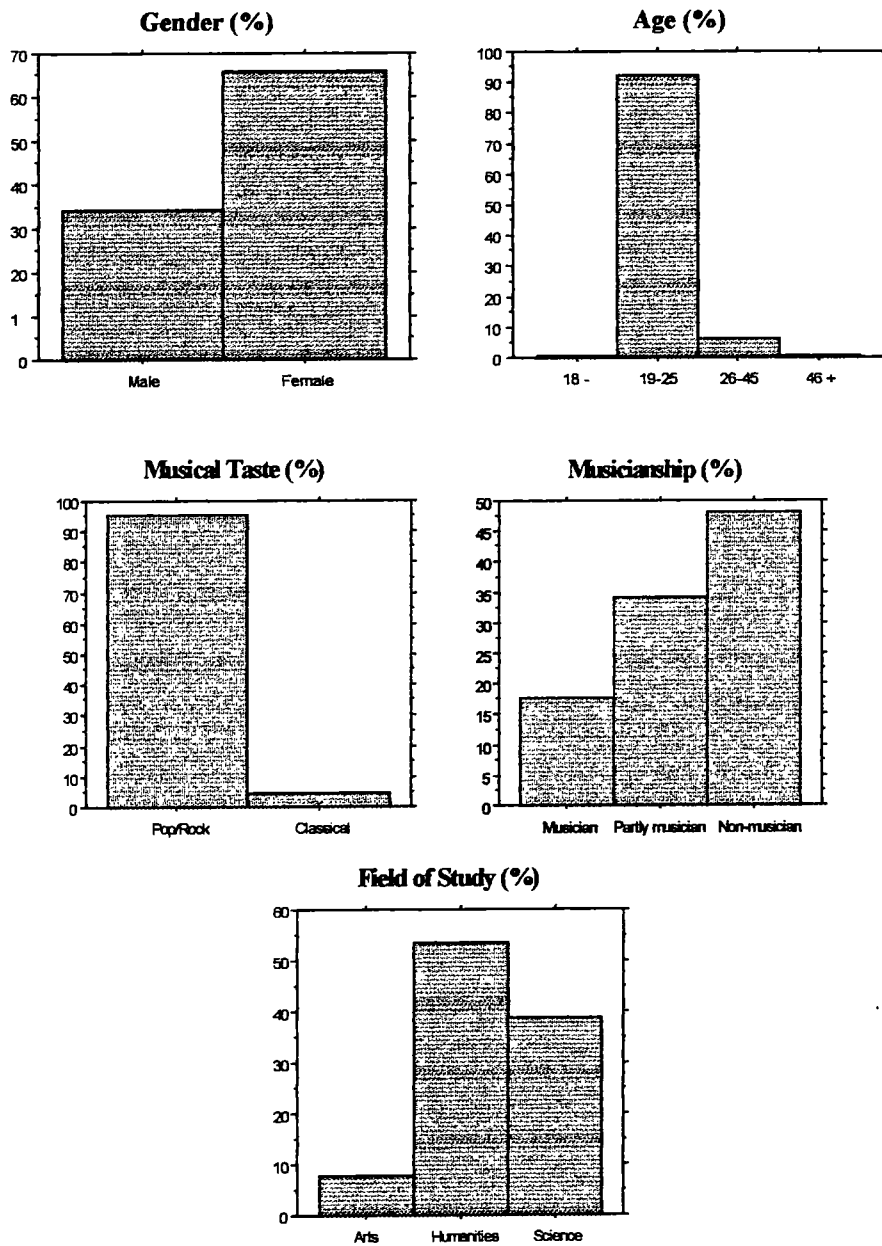
4.2.1. Sample Description

The test was conducted on two occasions: 15 April (N=78) and 16 April (N=54) 1997. Since the test was exactly the same, and given in the same conditions (same room, same time allowed, etc.), both groups have been merged into a larger group (N=132).²³³ Now, four subjects had more than twenty missing answers (> 10%) and were thus excluded from the analysis, making the final total number of subjects to N=128.²³⁴ The subjects were undergraduate students registered in an introductory course about classical music history. Therefore, they were not *a priori* musicians. Generally speaking, subjects were mostly women, aged between 19 and 25, mostly listening to rock music, studying humanities, and who consider themselves as non-musicians. The following histograms (Figure 4.2-1) provide more detailed information.

²³³ In any case, when comparing results from both groups, one can see a very high correlation between the groups.

²³⁴ After this correction, there were still missing values (no more than two for any variable). The mode was used as a corrector. In any case, when leaving blanks, results were very similar (almost identical actually).

Figure 4.2-1: Subjects' Profile



4.2.2. Test Procedure

Subjects were first asked to read the instructions and to complete an identification section (see Appendix 2). Then, they were informed that they would be listening to a series of eight sound excerpts that they would have to rate using the provided questionnaire. Before they started, they were exposed to an excerpt of the original recording (Normal setting) and then were asked to focus on the sound of the voice for the eight following excerpts. The

questionnaire consisted of 25 bipolar adjective scales which were arranged in a single random order, identical for all subjects. Testing lasted approximately 40 minutes.

4.3. Results and Discussion

4.3.1. Overall Results

First, here is a table presenting the overall results after having computed the median for every scale over subjects (Table 2.3-1).²³⁵ Abbreviations stand for Normal (N), Reverberation (R), Echo (E), Slap Echo (S), Flanging (F), Telephone (T), Harmoniser (H) and Distortion (D). A01 to A25 correspond to the 25 pairs of adjectives that were given in the test (and which are given in brackets).

²³⁵ The use of the median follows Osgood's suggestion (Osgood *et al.* 1957: 87).

Table 4.3-1: Overall Results

	N	R	E	S	F	T	D	H
A01 (Instable - Stable)	2	0	-1	-1	-1.5	-1	-3	-3
A02 (Sécurisant - Dangereux)	-2	0	0.5	0	1	1	2	2
A03 (Réel - Irréel)	-3	2	2	1	2	1	2	3
A04 (Aliéné - Sain d'esprit)	3	0	0	0	-1	-0.5	-2	-3
A05 (Sacré - Profane)	0	-2	-1	0	0	1	1	2
A06 (Près - Loin)	-2	2	3	1	1	3	2	1
A07 (Faux - Vrai)	3	-1	-1	-1	-2	-1	-2	-3
A08 (Passé - Futur)	0	-1	-1	0.5	2	-0.5	0	2
A09 (Triste - Joyeux)	0	0	0	0	0	-1	0	-1
A10 (Naturel - Artificiel)	-3	2	2	1	2	2	3	3
A11 (Coupable - Innocent)	0	0	0	0	0	0	0	-1
A12 (En mouvement - Immobile)	2	-1	-1	-1	-1	1	-2	-2
A13 (Fort - Faible)	0	-2	-1	-1	-1	1	-3	-1
A14 (Intérieur - Extérieur)	0	-1	1	1	-1	0	2	0
A15 (Doux - Agressif)	-1	-1	-1	0	0	0.5	3	2
A16 (Supérieur - Inférieur)	0	-1	-1	-1	0	0	0	-1
A17 (Courageux - Peureux)	0	0	-1	0	0	0	0	0
A18 (Tendu - Détendu)	2	1	1	0	-1	-1	-3	-2
A19 (Désespéré - Confiant)	2	1	1	1	0	-1	-1	-1
A20 (Humain - Inhumain)	-3	1	0	0	2	0	2	3
A21 (Malveillant - Bienveillant)	2	1	1	1	0	0	-2	-1.5
A22 (Beau - Laid)	-2	-1	-1	-1	1	1	3	2
A23 (Autoritaire - Soumis)	0	-1	0	-1	0	0	-1	0
A24 (Ancien - Nouveau)	0	-1	-1	0	1	-1	0	1
A25 (Angélique - Démoniaque)	0	-1	-1	0	1	0	2	2

Now, it is possible to make some observations directly from Table 4.3-1. For example, looking at scale A01 we see that Normal voice has been perceived as quite stable, while

Harmoniser and Distortion were perceived as very unstable. This is fine, but the large amount of data might complicate interpretation. For example, it becomes difficult to compare two vocal settings against all twenty-five scales. For this reason, and following again Osgood's suggestion, I have applied a statistical technique called *factor analysis*.²³⁶

4.3.2. Factor Analysis

4.3.2.1. Definition

It is not in the scope of this dissertation to provide a complete presentation of factor analysis technique.²³⁷ However, the following passage outlines the idea quite satisfactorily.

Factor analysis is a multivariate statistical technique that is concerned with the identification of structure within a set of observed variables. Its appropriate use involves the study of interrelationships among variables in an effort to find a new set of variables, fewer in number than the original variables, which express that which is common among the original variables. Factor analysis establishes dimensions within the data and serves as a data reduction technique (Hair *et al.* 1987: 278).

In other words, factor analysis allows us to group together similar variables into categories that are named 'factors'. Accordingly, each factor can be considered as a kind of 'summary' of what is expressed by its corresponding variables. In the context of tests using semantic differential, analysts usually use the three main factors discovered by Osgood and which are labelled respectively Evaluative, Potency and Activity. According to Osgood, almost any

²³⁶ Although I am mostly referring to the overall results in the remainder of the dissertation, factor analysis results are also used on some occasions.

²³⁷ A very good general description is notably given in Hair *et al.* 1987: 233-291, while a clear and complete presentation can be found in Rummel 1970.

variable can be related to one of these three general categories. However, Osgood's three factors have been developed for measuring connotations conveyed by words and, when dealing with other concepts (music, paintings, etc.), it is no surprise that different or additional factors than Osgood's will be found. For this reason, some time will be devoted to the interpretation of a factor analysis procedure involving the present results in order to try to identify useful factors when dealing with vocal settings.

As Buss has observed, 'Unlike many statistical procedures, most factor analyses are not limited to one possible solution' (Buss 1971: 70). This implies that the main difficulty with factor analysis is finding the most satisfactory solution for interpreting overall results. In the context of my results, the final solution I have favoured made it possible to 'compress' the scales into eight categories (factors).²³⁸ Basically, factor analysis first measures the correlation between variables (here scales); then it determines a satisfactory number of categories in which they can be classified; finally, it assigns a loading for each variable on each factor. This loading 'represents the correlation between [the] original variable and its factor' (Hair *et al.* 1987: 249).

4.3.2.2. Factor Analysis Solution

After having applied the methodological procedures prescribed by Hair *et al.* (1987: 250-252) and Rummel (1970: 359-367), and according to some decision rules which will be stated shortly, I have obtained the solution presented in Table 4.3-2.²³⁹

²³⁸ This is more than the three factors suggested by Osgood, but Osgood himself admits that some solutions might require more than three factors.

²³⁹ Adjectives are translated from French. Regarding French, some studies have shown that there were no significant differences when a given test was given in different languages (Snider and Osgood 1969).

Table 4.3-2: Factor Analysis Solution

Variables		Orthogonally Rotated Factors ²⁴⁰							
No.	Bipolar Scales	1	2	3	4	5	6	7	8
A15	Mild-Aggressive	.82	-.07	.17	-.02	.01	-.06	0	.11
A25	Angelic-Demoniac	.80	-.04	.11	-.09	-.14	-.01	.13	-.02
A22	Beautiful-Ugly	.78	.01	.29	-.10	.10	.15	-.01	-.04
A21	Malevolent-Benevolent	-.74	-.03	-.19	-.04	.14	-.03	-.11	.18
A18	Tense-Relaxed	-.69	.14	.04	.05	.19	-.07	-.13	.34
A19	Desperate-Confident	-.50	-.48	-.02	.07	.29	.01	-.09	.13
A16	Superior-Inferior	.17	.79	.04	.02	.01	-.03	-.14	-.03
A17	Brave-Fearful	.08	.77	.16	-.01	-.03	.13	.16	.05
A13	Strong-Weak	-.22	.76	-.01	.15	.11	.04	-.02	-.10
A23	Authoritarian-Submissive	-.13	.69	.04	-.15	-.13	-.13	.22	.08
A10	Natural-Artificial	.17	.03	.87	.02	.02	.13	0	.05
A03	Real-Unreal	.01	.14	.81	.05	-.30	-.08	-.07	-.11
A20	Human-Inhuman	.31	-.03	.75	.01	0	.17	.02	-.14
A07	False-True	-.23	-.08	-.75	.02	.26	-.03	-.11	.14
A08	Past-Future	-.10	.02	.04	.86	-.09	-.01	.09	.14
A24	Old-New	-.10	.03	.02	.85	.17	0	.06	.03
A01	Unstable-Stable	-.09	-.09	-.27	.09	.73	-.31	.13	.01
A12	In motion-Motionless	-.08	.13	-.15	.11	.60	-.21	-.15	-.20
A02	Safe-Dangerous	.44	.01	.27	.03	-.56	-.07	-.04	-.39
A04	Insane-Sane	-.30	-.03	-.53	-.04	.55	.06	-.07	.23
A06	Near-Far	.06	.01	.17	.01	-.16	.91	-.01	-.07
A05	Sacred-Profane	.23	.11	.04	.17	.02	-.01	.88	-.04
A09	Sad-Happy	-.17	-.05	-.29	.23	.03	-.10	-.04	.78
A11	Guilty-Innocent	-.49	.05	-.19	0	.17	.12	.22	.06
A14	Interior-Exterior	.31	-.14	.22	.34	-.09	.06	.03	-.01

As a decision rule, loadings higher than .50 in absolute value were considered significant. The retained solution presents eight factors (five group factors and three specific factors).²⁴¹ A five-factor solution, only considering the group factors, could have been selected; but it was felt that the three specific factors were relevant to the concepts which

²⁴⁰ The term 'orthogonally' refers to the mathematical method used by the computer when calculating factors. For more information, see Rummel 1970; Hair *et al.* 1987.

²⁴¹ Group factors are factors that are represented by more than one variable, while specific factors have only one variable.

were measured. For their part, variables A11 and A14 were representing a factor which was rejected because judged meaningless (Rummel 1970: 356-357).²⁴²

4.3.2.3. Labelling of Factors

Since we are dealing with words (here adjectives) that have semantic content, it becomes possible to name each factor accordingly (Hair *et al.* 1987: 257-259; Rummel 1970: 472-479). According to Hair *et al.* (1987: 257-258), one should use all significant loadings in the naming process (significant loadings are indicated in bold type in Table 4.3-2). Looking at Table 4.3-2, it is quite clear that each factor can be named according to the 'shared' semantic content of the scales' adjectives. As stated earlier (4.3.2.1 above), in their study Osgood *et al.* (1957) have determined three major factors that they have labelled Evaluative (good-bad), Potency (strong-weak) and Activity (active-passive).

In our case, Factor 1 could be associated with Osgood's Evaluative one (note that there is no 'good-bad' scale in the test); however, I believe it would be more adequate to talk about a Benevolence factor (abbreviated B). Similarly, Factor 2 is clearly associated with Osgood's Potency factor. But according to the adjectives we find on Factor 2, it seems to suggest more a degree of strength of character rather than a general idea of potency (especially because of scales A17 'Brave - Fearful' and A23 'Authoritarian - Submissive'). This, of course, is directly related to the selection of scales which I considered adequate for my study. In any case, I will still use the term Potency (abbreviated P). Osgood's Activity

²⁴² It is indeed difficult to find any semantic relation between 'Guilty-Innocent' and 'Interior-Exterior'. Furthermore, it is worth saying that some subjects have indicated on the questionnaire that they did not understand how variable A14 (Intérieur-Extérieur) was related to the concepts; and looking at Table 4.3-1, one can see that variable A11 has a score of zero for 7 of the 8 concepts.

factor seems to be related to Factor 5 ('Unstable-Stable', 'In motion-Motionless', 'Safe-Dangerous', etc.). However, I would prefer to label it as a *Stability factor* (abbreviated S). We then have to label the two remaining group factors. I would propose *Naturalness* (N) for Factor 3 which presents scales like 'Natural - Artificial', 'Real - Unreal', 'Human - Inhuman', and so on. Note that variable A04 loads significantly both on Factor 3 and Factor 5. This fact has been considered in the labelling process: the pair of adjectives 'Insane-Sane' could both be associated with an idea of *Naturalness* and of *Stability*.²⁴³ The fourth factor, represented by scales 'Past - Future' and 'Old - New', could be labelled *Temporality* (T). The three specific factors could be labelled respectively *Distance* ('Near-Far'), *Religiosity* ('Sacred-Profane') and *Happiness* ('Sad-Happy'), and will be abbreviated D, R and H. In other words, we can consider to a certain extent that subjects have evaluated the *Benevolence*, *Potency*, *Naturalness*, *Temporality*, *Stability*, *Distance*, *Religiosity* and *Happiness* connotations expressed by the sound excerpts.²⁴⁴

4.3.2.4. Computation of Factor Scores

Now that we have an eight-factor solution, it is possible to assign a score for each concept on each factor. These factor scores may be computed using various approaches (Rummel 1970: 433-445). I have decided to compute a *composite* factor score which 'involves selecting a group of variables to represent a factor and summing their values' (Rummel 1970: 441). As a decision rule, I have selected loadings higher than .600 for computing factor scores. Furthermore, and again following Osgood's suggestion, the median

²⁴³ In French, the words used were 'Aliéné-Sain d'esprit': the term 'aliéné' both means 'altered' and 'insane'.

²⁴⁴ It is not unusual to find solutions with other factors than the three discovered by Osgood *et al.* For example, in a study on prose style, John B. Carroll has determined six factors: Evaluative, Affect, Ornamentation, Abstractness, Seriousness, and Characterisation versus Narration (Snider and Osgood 1969: 593-602).

was used for calculating the factor scores.²⁴⁵ The scores' signs were adjusted according to the following directions:

Benevolence: - \Rightarrow malevolent; + \Rightarrow benevolent

Potency: - \Rightarrow weak; + \Rightarrow strong

Naturalness: - \Rightarrow artificial; + \Rightarrow natural

Temporality: - \Rightarrow past; + \Rightarrow future

Stability: - \Rightarrow unstable; + \Rightarrow stable

Distance: - \Rightarrow near; + \Rightarrow far

Religiosity: - \Rightarrow profane; + \Rightarrow sacred

Happiness: - \Rightarrow sad; + \Rightarrow happy

4.3.3. Final Results

4.3.3.1. General Results

Table 4.3-3 presents the final results for the eight concepts evaluated (abbreviations within brackets). For now, concepts are given in order of scores on the Benevolence factor. If two scores were equal, the corresponding Potency score was used as a discriminating factor, and so on. This section presents no more than the most obvious interpretations related to the measured vocal settings. Additional references to this test are found in the remainder of the dissertation.

²⁴⁵ In other words, for each factor, and each concept (vocal setting), I have computed the median of the scores obtained for the corresponding scales. But before calculating the median, I had to put each scale on the 'right direction', as indicated by the signs given in the Orthogonal Solution (Table 4.3-2). For example, looking on Table 4.3-2, Factor 1 is constituted of the following scales: A15, A25, A22, A21, A18 and A19; for Distortion, the values of these scales are, according to Table 2.3-1: 3, 2, 3, -2, -3 -1. Now, according to the signs given in the Orthogonal Solution (Table 4.3-2), these scores should become -3, -2, -3, -2, -3, -1. Then, if we compute the median for loadings higher than .600 (-3 for A15, -2 for A25, -3 for A22, -2 for A21 and -3 for A18), we obtain a factor score of -3 (very malevolent) for Distortion on the Benevolence factor.

Table 4.3-3: Final Results

	Benevolence	Potency	Naturalness	Temporality	Stability	Distance	Religiosity	Happiness
Normal	2	0	3	0	2	-2	0	0
Reverb	1	1	-1.5	-1	-0.5	2	2	0
Echo	1	1	-1.5	-1	-1	3	1	0
Slap	0	1	-1	0.25	-1	1	0	0
Telephone	-0.5	0	-1	-0.75	0	3	-1	-1
Flanging	-1	0	-2	1.5	-1.25	1	0	0
Harmoniser	-2	0.5	-3	1.5	-2.5	1	-2	-1
Distortion	-3	0.5	-2	0	-2.5	2	-1	0

Looking at Table 4.3-3, it becomes much easier now to propose some interpretations of the results. It is possible to say, for example, that Distortion was considered to be very Malevolent, with little Potency, to be quite Unnatural, with no specific connotation regarding Time, very Unstable, quite far, a little profane and neither sad nor happy. On the other hand, it can be said that Normal voice was perceived as being quite Benevolent, indifferently Potent, to be very Natural, without connotation regarding Time, quite Stable, quite close, with no religious connotation, neither happy nor sad.²⁴⁶ Another way to look at the table would be to make comparisons between the different concepts. For example, while Distortion and Harmoniser are perceived in quite the same way for most of the factors, they seem to have different Temporality connotations: Distortion is not perceived as being particularly old or new, while Harmoniser is definitely carrying some ‘futuristic’ connotation.²⁴⁷ For their part,

²⁴⁶ Of course, the way the text was actually uttered by the speaker probably had an effect on these results. It is why different types of voice should be used in a further test. In any case, it is clear from the results that different presentations (settings) of the same voice did change very much the perception of this voice. More details after these results.

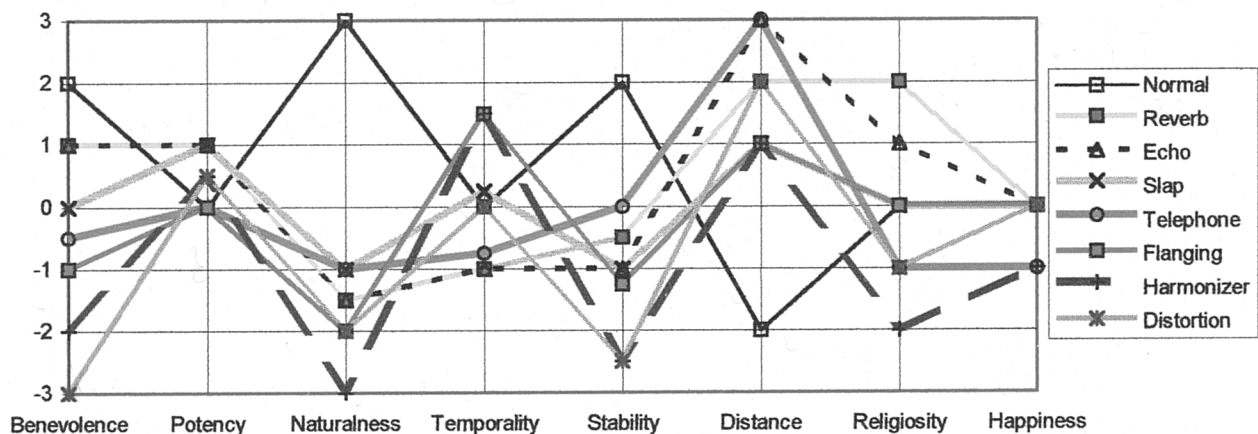
²⁴⁷ This is an example of the importance of having retained a higher number of factors than the usual Osgood’s three factors.

Reverberation, Echo and Slap Echo have been perceived as quite similar, except for some interesting details: Reverberation is perceived as carrying a more ‘sacred’ (or religious) connotation than the two others. Voice with Echo is perceived as being farther than the two others, although all of them convey some distance connotations.

4.3.3.2. Graphic Representation

It is also possible to present the results in a graphic form (Figure 4.3-1), which could help in isolating particular characteristics:

Figure 4.3-1: Graphic Representation of Final Results



One of the most striking characteristics of the graph is the contrast between Normal voice and the other concepts on the Naturalness factor. It is not so much the fact that Normal voice was considered very natural compared with the others, as that no other concept was perceived as

at least *a little* natural. Furthermore, the least unnatural of these concepts are Telephone and Slap Echo, when one could have expected Reverberation to be the closest to Normal voice.²⁴⁸

Some other interesting observations may be made, notably regarding Reverberation and Echo: Reverberation shows the highest score on the Potency factor, along with Echo and Slap Echo, which could provide us with a clue concerning the question of the widespread use of these settings on vocals in rock music.²⁴⁹ When looking at the Temporality factor, we see that Reverberation, along with Echo and Telephone, tends to connote 'pastness', which again would partly explain the use of Echo and Reverberation as marker of past actions in cinema for example (see 2.3.1.2.2.2 above). For its part, a score of -.75 on the Temporality factor for Telephone may have some relation to the fact that a loss of higher and lower frequencies may remind some of older recordings.

Additional possible interpretations can be made when looking at the last three factors. While Normal voice was perceived as the closest concept, Echo and Telephone were the farthest. On the Religiosity factor, it is interesting to note that Reverberation conveys the most sacred connotation, followed by Echo, Harmoniser being perceived as the most profane. Finally, most of the concepts were perceived as neither sad nor happy, except for Telephone and Harmoniser that tend to connote sadness. It is quite revealing, when focusing on Telephone, to see that it is perceived as connoting a little of something from the past, very far

²⁴⁸ It could have something to do with the *kind* of reverberation which has been used and its *intensity*. Further research would be needed to clearly answer this question. In any case, it does account for the fact that 'telephone' sound is now considered as a part of our everyday, 'natural', sonic environment. Regarding Slap Echo, it might have something to do with sound as heard outdoors. Again, we would need further studies.

²⁴⁹ See also Richard Middleton's comment discussed in 3.1.1.2.3 above.

and a little sad (reminds me of several phone conversations...).²⁵⁰ And it is plausible to argue that such a setting conveys that kind of connotations when used in pop songs.

Finally, the Potency and Happiness factors deserve some short comment. Looking at the graph (Figure 4.3-1), one can easily see that Potency and Happiness factors are not that significant: scores on the Potency factor range between 0 and 1 while they range from 0 to -1 on the Happiness factor. I would argue that such a small change in perception would be due to the fact that these types of connotation are conveyed by the voice itself rather than by the setting.²⁵¹ Obviously, the setting does have some influence (especially when looking at some specific scales on the Potency factor, such as A13 'Strong-Weak', which range from 1 to -3), but it would be interesting to see how ratings of these factors would behave when the source itself (in a Normal setting) conveys strength-weakness or happiness-sadness connotations.

4.4. Conclusion

Results of this test have shown that the particular vocal settings convey particular connotations. Or, to put it in another way, voice presented in specific settings tends to convey quite specific connotations, which, in their turn, are dependent, to various degrees, both on the voice itself and the setting. Indeed, the last section on Potency and Happiness factors has indicated that these connotations seem to be more dependent on the voice itself (for example,

²⁵⁰ This emotional dichotomy is notably explicable by the fact that telephone is both conveying a voice that is far in terms of actual geographical distance, and very close at the same time: ' [...] personne encore, à ma connaissance, n'a songé à utiliser le téléphone pour la transmission de poésie. Je m'en étonne. Imposant en effet, à l'individu retranché dans son existence propre, la voix d'un autre (à la fois corps et parole), le téléphone véhicule une charge érotique, latente ou manifeste, source d'une énergie langagière comparable de loin à celle qu'ailleurs s'asservissent l'incantation du chamane, le chant de l'envoûteur ou celui de l'amant' (Zumthor 1983: 236).

²⁵¹ Stan Hawkins writes that 'Ultimately, we might consider the gestural and somatic properties of the [vocal] performance as responsible for regulating continuity in the narrative and establishing the emotive and aesthetic qualities of the song' (Hawkins 1996: 32).

on paralinguistic elements) than on the setting. In other words, the channel which conveys the Potency and Happiness connotations is more the sound of the source itself (the way it is modulated by the artist) than its staging. On the other hand, Naturalness and Distance connotations are clearly communicated through the settings. One could argue that in such cases, the voice itself is not able to convey this type of information on its own, and that it needs specific settings to convey the desired effects.²⁵² Again, further tests, with similar settings applied to different voices, would help to clarify this point. Finally, for some factors, such as Benevolence, Stability or Religiosity, further experiments would be needed in order to verify the 'ratio' of influence between both the source itself and its setting in conveying the respective connotations. For example, would a very aggressive voice as an original sound be perceived as less aggressive when in a Normal setting than with Distortion? Would it be possible to see a difference, or would subjects indifferently consider the voice as being very aggressive? Further research is needed to answer such questions.

It is obviously not possible to identify a complete cohesion in meanings only from reception tests (out of context, both musically and sociologically). We also have to look at the repertoire itself. Ultimately, a combination of data (historical, psychoacoustical and pragmatical) should help us in getting a clearer picture of the situation. As Middleton (1990: 90) writes:

[...] 'constellations' of meaning and practice are anything but 'academic'. Interventions cannot start *ab initio*; they have to begin from an awareness of the relationships that currently exist. Radical work can only hope to succeed if it plays, by modification, inversion, rearticulation or contrast, off an acknowledgement of the strength of existing manifestations of technology and cultural form.

²⁵² See, for example, Michel Chion's discussion described in 2.3.1.2.2.2 above.

Once again, it is not intended to pretend that vocal settings express fixed meanings or emotions. Rather, settings can differ and be exploited depending on the context in which they are heard. This malleability of vocal staging's evocative power is thus contingent on at least two factors: first, on the point of insertion within a particular recording—and its relationships with all the other acoustic data—; second, on *when* and *where* the recording is heard. This changing vocation of vocal staging—and other similar devices—is well expressed through the notion of 'acoustic trace' proposed by Véronique Campan (1996: 38):

[...] the acoustic trace introduces [...] a *disturbance*, which is not transforming the world itself, but rather the perception it is aiming at. It is disturbing because it does not allowed itself be classified or confined within the limitation of a given representation, rather inviting the listener to work on his/her own exegesis.²⁵³

Chapter 5 is devoted to the study of examples found in the rock repertoire that should account for this 'semiotic diversity', as well as for a certain level of coherence between the different effects and connotations related to each occurrence of vocal staging effects.

²⁵³ 'la trace acoustique introduit [...] un *dérangement*, ne transformant pas le monde, mais la perception qui le vise. Elle dérange parce qu'elle ne se laisse pas classer ni enfermer dans les limites d'une représentation donnée, invitant plutôt l'auditeur à un travail d'exégèse'.

Chapter 5

Vocal Staging Effects in the Rock Repertoire

Soaring free and light across vast open space to suddenly crash down into thick reality. Then up again, twisting, turning, slam right over everything you ever felt. Possibly beginning to bounce at this point, then skip a little, then get all dark and a little bit frightening only to smile in the end. Science fiction? Nope. Drugs? Nope. John Wayne in a western? Certainly not. Just the electronics [...]. The special effects of sound. The special effects of sound on each and every one of us.

(Robinson 1971: 107)

5.0. Introduction

5.0.1. *Issues and Method*

This chapter is devoted to the study of examples taken from the rock music repertoire roughly from the mid 1960s to 2000 with special emphasis on the 1990s. Contrary to chapters 1 and 2, whose observations were relying almost exclusively on comments and interpretations from secondary sources, this chapter's argumentation is mostly based on analysis made directly on the recorded repertoire. Of course, secondary sources are also evoked in many occasions, namely in order to provide further support to the discussion. More precisely, I will be relying on four types of information, depending on the needs. First, intramusical observations resulting from direct analysis of recordings, usually in the form of an analysis of

text-music relationships where vocal staging will be the musical parameter I will be mainly concentrating on. Second, observations coming from a comparison process between different songs displaying similar vocal settings.²⁵⁴ Third, I will sometimes relate observations to results from the reception test presented in chapter 4. Finally, information found in secondary sources (interpretations, historical data, psychoacoustical data, etc.) will also be used in order to further increase the scope of our observations.

Two main approaches, each presenting a different point of view on our object of study, are used here. At first, we will be flying over isolated examples presented according to a general classification of vocal staging effects based on previous work by William Moylan (1992) and myself (Lacasse 1995). Three main aspects of sound are at the basis of this classification: space, timbre and time. Table 5.0-1 presents an overview of the proposed categorisation that will serve as a guide in our first exploration process.²⁵⁵

Table 5.0-1: General Categorisation of Vocal Staging Effects

Categories		Corresponding Settings
Spatialisation	Environment	Flat voice; Voice with different types of reverberation; Short echoes; etc.
	Stereo Location	Centre; Left; Right; Bilateral; Movement; etc.
	Distance	Close; Far; Background; etc.
Timbre Modification		Flanging; Distortion; Telephone Effect; etc.
Temporal Manipulation		Echo; Reiteration; etc.

²⁵⁴ This approach has been especially used for the case of phasing studied in section 5.2.1 below.

²⁵⁵ Loudness, rather than being considered as a separated 'aspect of sound', is more or less included in all categories. For a specific discussion on loudness, see Moylan 1992: 41-43, 180-192.

In no way is this proposed classification intended to be exclusive, for these three aspects of sound are usually mutually intertwined. For example, reverberation, which is mostly responsible for spatial effects, also affects spectral and temporal characteristics of the original sound source: not only does the sound source seem to be sounding within a given environment (*space*), but its *timbre* is typically altered—usually through an enhancement of a particular range of the sound’s harmonic spectrum—and its duration (*time*) is prolonged. Moreover, it is common to find settings that act on more than one of the categories at the same time—for example, a flanged voice (*timbre*), panned left and sounding in a large environment (*space*), with a long echo (*time*). There are also settings that evolve in time, which can render its analysis even more difficult.²⁵⁶ The main reason for using such a classification system, really, is simply to help us orientate the examination process. Also, I do not pretend to present an exhaustive list of possible vocal staging effects; rather, the study of these examples aims at giving an *overview* of what can be heard in the rock repertoire. Since this dissertation constitutes a first general approach to a relatively new and hitherto unsystematised object of study, further research should be conducted afterwards on specific aspects of what is presented here.

In the second place, we will concentrate on one single song, namely Alanis Morissette’s ‘Front Row’ (1998), in order to analyse how vocal staging is exploited in that particular number, and how it corresponds to what we have observed so far. The choice for that song is mainly motivated by the fact that it presents several different vocal settings at the same time, thanks to today’s technology. It is hoped that this final analysis will serve as a

²⁵⁶ In fact, whole studies could be devoted to evolving settings; but since we have to start somewhere, the chosen examples presented in this chapter will usually act on one aspect of sound in particular.

kind of illustrative synthesis of what has been presented in this dissertation. The two processes have the same general objective: to try to understand the impact vocal staging might have on listeners, to try to catch a glimpse of the ‘constellation of meanings’ (Middleton 1990: 90) and emotions vocal staging might give rise to; in other words, to evaluate the reach of its evocative power. Before we do so, however, we need to spend some time with two aesthetic notions.

5.0.2. Aesthetic Considerations

5.0.2.1. Primary and Secondary Musical Materials

William Moylan (1992: 57-58) makes a distinction between two kinds of *musical materials* that are susceptible of being heard when listening to a piece of recorded music: *primary* and *secondary* musical materials. These musical materials are conceived as a series of patterns that unfold through time; thus, ‘The listener remembers the patterns, together with their associations to larger and smaller patterns [...]’ in order to ‘understand the meaning and significance of the progression of sounds’ (p. 57). Moylan continues:

In presenting materials, some patterns will draw the listener’s attention and be perceived as being more important than other patterns—these are the *primary musical materials*. Other patterns will be perceived as being subordinate. These *secondary materials* will somehow enhance the presentation of the primary materials by their presence and activity in the music.

Moylan identifies melody and lyrics as the most common primary materials encountered in music in general. This claim might be applicable to popular music, but only to a certain extent, i.e. by also acknowledging the possible predominance of other parameters of musical expression. For example, I would definitely consider the singer’s performance

(including his/her voice's timbre, paralinguistic elements, etc.) as a primary musical element, especially in the case of rock music, not to mention other possible musical parameters that are often used as primary material, such as instruments' timbre (guitars, synthesizers, etc.), rhythmic grooves, etc. As a matter of fact, some examples of vocal settings presented in this study will be considered as primary musical material.²⁵⁷ As for secondary materials, besides traditional parameters of music such as harmony, accompaniment, rhythmic patterns, etc., Moylan identifies 'dynamic contour, textural density, timbre development, stereo location, distance location and environmental characteristics' (p. 58) as other possible secondary musical materials. Finally, he notices that 'Most often, current production practice will utilize the new artistic elements, such as stereo location of a sound source, to support the primary message (or to assist in defining the individual sound sources) [...]' (p. 59). To sum up, while it is true that melody and lyrics are most likely to be considered as primary musical materials, this must not hide the predominant role other parameters might take.

In rock recordings vocal settings are most often used as 'secondary musical materials'—as opposed to, say, their use in electroacoustic music. For example, to add a dose of reverberation, mostly in order to recreate a given environment, has become the norm in recording practice. This is especially true for recordings adopting an artistic-technological aesthetic tending toward the natural-realistic pole (see 3.0 above).²⁵⁸ In most of these recordings, reverberation is used to simulate 'natural' rooms and halls in a quite systematic and coherent fashion, without much emphasis or contrast. However, it would be misleading to

²⁵⁷ For example, and as demonstrated by a critic's comment on Cher's 'Believe' (1998) presented in 0.1 above, settings such as Cher's manipulated voice might even become 'the musical hook'.

²⁵⁸ Since we will not refer any more to 'completely' realistic aesthetics or 'completely' full technological aesthetics, for now on we will simply use 'realistic' or 'technological' when referring to one or the other tendency within the general artistic-technological aesthetic.

consider environment—as well as any other traditional or technological musical parameter—as negligible in the communication of the ‘artistic message’. Indeed, listeners have to be considered as very good at hearing and identifying environmental characteristics, timbres and temporal effects. For example:

Humans experience and remember the sound qualities of a great many natural environments (in much the same way as they remember timbres). Further, they have the ability to match those environments in their previous experiences to new environments they encounter, thereby allowing for the evaluation of the characteristics of host environments’ (Moylan 1992: 30).²⁵⁹

It is therefore not surprising that recordists spend quite a long time in choosing appropriate vocal staging effects depending on the song: even though the effect is subtle, it becomes a particular element, among others, in the construction of a specific atmosphere or musical context corresponding to the musical style the recording belongs to. Before we go further, we must look at another aesthetic aspect of music (and art in general): contrast.

5.0.2.2. Effects of Contrast

While the notions of primary and secondary musical materials help us to better situate the role vocal staging might take, or the function it may have—namely, to support or enhance

²⁵⁹ Moylan (1992: 31) adds that ‘These listening skills of evaluating and recognizing environmental characteristics can be developed to a highly refined level. People who have studied acoustical environments have refined this ability to the point where they can perceive the dimensions of an environment, openings within an environment (doors, windows, etc.), and reflective surfaces within an environment, and can accurately determine the construction material incorporated into the various reflective surfaces of an environment’. Because of this ability we have, specific environments have become part of our memories: ‘À qui sait écouter la maison du passé, n’est-elle pas une géométrie d’échos ? Les voix, la voix du passé résonnent autrement dans la grande pièce et dans la petite chambre. Autrement encore retentissent les appels dans l’escalier. Dans l’ordre des souvenirs difficiles, bien au-delà des géométries du dessin, il faut retrouver la tonalité de la lumière, puis viennent les douces odeurs qui restent dans les chambres vides, mettant un sceau aérien à chacune des chambres de la maison du souvenir. Est-il possible, au-delà encore, de restituer non pas simplement le timbre des voix, « l’inflexion des voix chères qui se sont tues », mais encore la résonance de toutes les chambres de la maison sonore ?’ (Bachelard 1983: 68).

a given primary musical element—the notion of contrast should allow us to better outline its (mostly aesthetic) potential *impact*. Far from wanting to present a general theory of contrast, I would like to concentrate on a limited number of contrast types.²⁶⁰ I would thus wish to make a distinction between two types of contrast that I will be respectively naming ‘paradigmatic’ and ‘syntagmatic’. By ‘paradigmatic contrast’, I refer to effects of contrast between a given sound event (vocal setting) and expectations within a given system of reference. In the context of this study, I identify two main systems of reference against which a paradigmatic effect of contrast might occur, namely ‘real life’ and style. For example, a quite ‘natural’ effect of reverberation, despite the fact that it is produced through electronic means, is susceptible to give rise to a little effect of contrast in regard to what is experienced in most ‘real life’ situations. However, such a realistic reverberation might well (still paradigmatically) contrast with what is usually heard within a given musical style. For instance, it is quite unusual to have low-processed vocals in rave music, in which it is common to hear, say, loud reverb and echo effects.²⁶¹ Similarly, highly processed vocals, such as is often the case in up-tempo numbers by Nine Inch Nails (whose singer, Trent Reznor, is often heard with heavy distortion (see 5.2.2)) might be considered by their fans as not *stylistically* contrasting so much as completely ‘unnatural’, and consequently in paradigmatic contrast with what is more likely to be heard in real-life.²⁶²

²⁶⁰ For a general theory of contrast in arts, see Ross 1982. Despite the interest of Ross’ theory, I chose not to integrally apply it in the context of this study which is much more specific. I might nevertheless sometimes refer to his nomenclature.

²⁶¹ Incidentally, Philip Tagg (1994: 215) writes that ‘Sung vocals are the only tracks in rave mixes that seem to be consistently given much echo, usually in the form of quite a generous reverb with Echoplex delay effects added at suitable junctures. Other tracks seem generally to be mixed up quite loud without much reverb, this producing a close, distinct, compact and busy effect over which the women wail in what seems like another acoustic dimension’.

²⁶² In this regard, overall results from the reception test presented in 4.3.1 (Table 4.3-1) show that most listeners have considered distorted voice as ‘very artificial’ (+3) while normal voice was perceived as being ‘very natural’ (-3).

Syntagmatic effects of contrast, on the other hand, occur within the frame of a given recording. But here again, a further distinction needs to be made because of music's bi-dimensional temporal properties. Indeed, music acts both diachronically (unfolding of sound events as time elapses—for example, melodic lines and lyrics) and synchronically (superposition of sound events at a given time—for example, harmony and texture). Consequently, it is possible to find diachronic and synchronic syntagmatic effects of contrast. A good example of the latter is provided by Philip Tagg's brief description of rave's usual sound structure²⁶¹, in which heavily processed vocals usually contrast (synchronically) with the low processing displayed by the musical accompaniment. On the other hand, diachronic effects of contrast occur when the setting displayed by a given vocal stream suddenly changes in time, and the more different the settings, the more accentuated the contrast. Consequently, and in relation to what has been said in 5.0.2.1 above, contrasting vocal staging effects might be more noticeable, thus susceptible of becoming more important within the musical materials' 'hierarchy'. Gary Burns (1987: 17), when discussing the function of hooks in recordings, provides examples of paradigmatic and syntagmatic effects of contrast created through vocal staging.

Practically every pop record released today contains audible reverb, distinctive equalisation, and/or more exotic effects. Cases in which the distortion effects are especially pronounced [paradigmatic contrasts] include: Gene Vincent, 'Be-Bop-a-Lula', echo on vocal (1956); C. W. McCall, 'Convoy', equalisation on vocal to simulate CB radio [...]. Distortion hooks can be particularly effective if they modulate by popping in or out [syntagmatic-diachronic contrasts]. In the Buckingham's 'Have You Noticed You're Alive' (1968), echo is used on the singer on the first word of the chorus and elsewhere. In Earth, Wind and Fire's 'Shining Star' (1975), a reverb effect that has been present (and probably unnoticed) through the entire record disappears startlingly during an unaccompanied group vocal a few seconds before the end.

It is with these different notions in mind, and according to the general classification presented in Table 5.0-1 above, that we will now turn to our exploration of a number of vocal staging effects found in the rock music repertoire.

5.1. *Proskênion*: Spatialisation of Recorded Voice

5.1.0. *Introduction*

From what has been described so far, exploitation or manipulation of spatial parameters seem to constitute the most common way of staging the voice, both acoustically (resonance in caves, spatial scenic conventions in theatre, reverberation in cathedrals, etc.) and electrically (artificial reverb, panning, proximity and intimacy due to microphone placement, etc.). Consequently, special attention will be given to this section. Pauline Oliveros (1995: 19) writes about the importance of spatial properties of sound in acoustic music.

Music, as I understand it, is played in acoustic spaces. Concert halls, theaters, cathedrals, etc. all act as mechanical amplifiers, which, by their architectural design, capture the sounds of voices and instruments, and impose resonances, reflections and absorption that color the sounds. Instrumental and vocal sounds are enhanced or distorted by these mechanical amplifiers, depending on the nature of the sound and the purpose of the design.

We have already mentioned (2.0.1) that the advent of modern recording technology has allowed a better control over sound. William Moylan (1992: 47) has attempted to identify the artistic role spatial manipulation of sound might take in a recording.

The spatial properties of sound play an important role in communicating the artistic message of recorded music. The roles of spatial properties of sound are many: it may be to enhance the effectiveness of a large or small musical idea; it may help to differentiate one sound source from another; it may be used for dramatic impact; it may be used to alter reality or to reinforce reality.

Moylan (p. 47) adds that ‘The number and types of roles that spatial location may play in communicating a musical idea have yet to be exhausted or defined’. This section aims to address at least part of the problem he identifies.

Still according to Moylan (1992: 212), and as already suggested in Table 5.0-1 above, there are three main spatial properties of interest when dealing with recorded sound.

The spatial elements of sound that are universally used in music productions are: 1. The perceived location of the sound source within the stereo array (the left-to-right, horizontal plane [...]); 2. The illusion of a distance of the sound source from the listener, within the perceived performance environment; and 3. The perceived environmental characteristics of the individual environments, in which the individual sound sources appear to exist [...].

In previous chapters, we have encountered a number of examples of the artistic impact some of these spatial properties (such as reverberation) might have on listeners in the context of different artistic/ritualistic means of expression (prehistoric rituals, radio, cinema, early recorded popular music, etc.). We will now turn to vocal settings mostly acting on environmental characteristics.

5.1.1. Environment

5.1.1.1. Definition

Environment can be defined as the perceived space within which a sound source seems to be sounding in a recording. Usually, it is reverberation that is responsible for giving the impression of a given environment.²⁶³ Accordingly, a large number of electronic reverb presets, as well as some types of echo, are available to suggest particular environments.

The acoustical characteristics of any space may be simulated by modern technology. [...] Not only is it possible to simulate the acoustical characteristics of known, physical spaces, it is possible to devise environment programs that simulate open air environment (under a variety of conditions) and programs that provide cues that are acoustically impossible within the known world of physical realities (Moylan 1992: 210).

We thus can find environmental characteristics ranging from relative flatness (little or no reverberation) to infinite (sustained reverberation), not to mention special effects such as gated reverb—a reverberation whose decay cuts abruptly after a certain amount of time, which is of course not possible in the ‘real world’.²⁶⁴ According to Moylan (1992: 50), the

²⁶³ ‘Reverberant energy is most important as an attribute of environmental characteristics [...]’ (Moylan 1992: 218). Of course, by itself reverberation is *not* space. In the acoustical world, reverberation is the result of an interaction between a sound source and the environment in which it is sounding. In fact, and positively speaking, reverberation can be strictly considered as *sound*, without any spatial connotation attached to it. It is our interpretation of that particular sound and the relation we make with what we experience in our day-to-day life that lead us to associate the sound of reverberation with a given environment: ‘If there is reverberation, the listener may interpret it as presenting information about the environment, such as the size of the room or the reflective properties of the walls and furnishings’ (Kendall 1995a: 24). Consequently, in a recording, reverberation only *represents* a particular environment, and thus already acts as a sign. Thanks to Keir Keightley for pointing this out to me.

²⁶⁴ Of course, decay of reverb will be *perceptually* cut following masking effects (see note 225 for a definition), or when a listener’s attention is distracted (either by intramusical or external events). The point is that a clear gated reverb effect is just not possible in nature. Echo can also suggest given environments, ranging from small rooms with parallel reflecting surfaces (shorter echoes) to outdoor locations such as mountains (longer echoes). However, echo, and longer echo in particular, is studied in more details in section 5.3.1 below because of its particular temporal implications.

coupling of a sound source—in our case, voice—with a given environment may give rise to a number of effects:

- Have a significant impact on the meaning of the music, of the text, or of the sound source;
- Supply dramatic effect;
- Segregate sound sources, musical ideas, or groups of instruments; and
- Enhance the function and effectiveness of a musical idea.

It is in the light of these points that we will now examine a number of recordings.

5.1.1.2. Study of Examples

5.1.1.2.1. Toward a Realistic Aesthetic

5.1.1.2.1.0. Introduction

When listening to the repertoire, environment often seems to recreate a ‘natural’ situation, such as stage or day-to-day situation, just as if the artist was performing in a given ‘natural’ room. This approach is adopted in many styles of rock music, or specific recordings, tending toward a realistic aesthetic. Obviously, since the use of ‘natural’ environment as secondary musical material constitutes the norm, examples abound in the rock repertoire; we will therefore concentrate on a limited number of them.

5.1.1.2.1.1. Voice Sung *a cappella*

We will start with two recordings in which voice alone is used, namely Suzanne Vega's 'Tom's Diner' (1987) and Alanis Morissette's 'Your House' (1995).²⁶⁵ In 'Tom's Diner' we hear Vega singing *a cappella* with a rather low level of reverberation, making the voice nearly flat. The song's lyrics consist of a subjective description of several small events witnessed by the main character while sitting in a restaurant, for which the used vocal setting seems appropriate. Indeed, if a high level of reverberation had been used instead, it would most probably have led to a different connotation.²⁶⁶ As a matter of fact, Morissette's song presents a significantly higher level of reverberation (and of a longer duration), suggesting this time that the singer is performing in a larger room. It is possible to relate the greater amount of reverberation found in Morissette's piece with the song's content. Indeed, when listening to the lyrics, we see that they depict a woman visiting her lover's empty apartment, where she finds a letter saying 'Hello love/I love you so love/Meet me at midnight'. The problem is that the character does not recognise her writing ('And no, it wasn't my writing'), implying that her lover has someone else in his life. In such circumstances, reverberation could be interpreted as representing both the actual physical emptiness of the apartment and the character's emotional 'emptiness'. Again, if a different setting had been used, say a completely flat environment, this supplemental possible connotation would probably not have been possible.

Another distinction between the two songs can be made on a musical level. In the case of Vega's song, the underlying rhythm could be considered as the main secondary musical

²⁶⁵ The two recordings have already been mentioned in 4.0, note 226.

²⁶⁶ See 2.3.1.2.2.2 for a similar observation in cinema.

element supporting the song's melodic line and lyrics. Indeed, the series of images are literally flashing by in the main character's mind. The syncopated rhythm, coupled with the syllabic melodic line, helps to evoke this high pace. On the other hand, Morissette's melody is more melismatic and encompasses a much wider range, two elements that the high level of reverberation helps accentuate. In this case, besides its additional connotative effect, reverberation constitutes the main musical accompaniment.

5.1.1.2.1.2. Singer-songwriters

Further uses of 'natural' environments are found in recordings by artists putting strong emphasis on lyrics rather than on music such as singer-songwriters Bob Dylan or Leonard Cohen whose recordings can generally be considered as adopting a quite realistic aesthetic. For example, Cohen's 'Suzanne' (1967), 'Famous Blue Raincoat' (1971), 'Take This Longing' (1974), or Dylan's 'It Ain't Me Babe' (1964), 'Like A Rolling Stone' (1965) and others, all display a quite natural vocal environment through careful doses of reverberation. Often, recordings by such artists may even display no reverberation at all, apparently again in order to focus attention on lyrics and to provide a greater sense of intimacy, which is characteristic of this musical style. Dylan's earlier songs, such as 'Blowin' in the Wind' (1963), along with Joni Mitchell's 'My Old Man' (1971) or Cohen's 'Lady Midnight' (1968) constitute examples of recordings with flat environments.²⁶⁷ One could even relate that practice with Vitruvius' early conception of 'consonant' and 'resonant' environments stating that resonant environments are more suitable for music, while consonant ones are more appropriate for speech (see 1.1.2.1.1.2 above). Indeed, the type of subtle, 'natural'

²⁶⁷ We also find examples of quite flat environments in standard rock songs such as Lynyrd Skynyrd's classic 'Sweet Home Alabama' (1974).

reverberation used in such songs, or its complete absence, helps the listener focus on voice itself and the uttered words rather than on sound effects that could be considered disturbing. It also provided some sense of intimacy, which again is characteristic of most songs belonging to this musical style.

5.1.1.2.1.3. Environment and Euphony

Conversely, a number of artists, renowned for their emphasis on music rather than lyrics, manifestly use a reverberant environment in order to ‘enhance the function and effectiveness of a musical idea’ (Moylan 1992: 50) rather than to provoke some dramatic effect. This approach, which is adopted in the context of a more technological (but still realistic) aesthetic than, say, folk singers, is characteristic of several early recordings by the Beach Boys or the Beatles. For example, every song appearing on the 26-track compilation *The Beatles: 1962-1966* (1993)—excluding ‘Help!’ (1965), ‘Paperback Writer’ (1966) and ‘Eleanor Rigby’ (1966)—displays a quite noticeable reverb effect, suggesting some ‘natural’ environment. Furthermore, most of these songs feature duos, choruses or double-tracked vocals, whose blending is further enhanced by the presence of reverb. Consequently, reverberation, as well as representing a stable and ‘natural’ environment—such as an on-stage situation—acts as a musical binder and thus becomes a musical element directly contributing to the effect of euphony, characteristic of that style.²⁶⁸ A typical example would be the opening measures of ‘Nowhere Man’ (1965) which feature unaccompanied vocal harmonies to which a fair amount of reverb has been added. Numerous songs by the Beach Boys, renowned for their vocal harmonies, also exemplify this euphonic use of reverberation almost

²⁶⁸ As already mentioned in section 1.1.3.1.1 above, this euphonic function is an important property of reverberation that has already been exploited, for example, in Gregorian chant.

always coupled with double-tracking: ‘409’ (1962), ‘Surfer Girl’ (1963), ‘I Get Around’ (1964), ‘California Girls’ (1965), and even later recordings such as ‘God Only Knows’ (1966) or ‘Good Vibrations’ (1966).

5.1.1.2.1.4. ‘Standard’ Rock

Finally, we find recordings of a mainstream style we could label ‘standard rock’ that *still use environment in a more or less ‘standard’ fashion. One could situate these recordings around the centre of the artistic-technological aesthetic axis.* For example, Bruce Springsteen’s voice is, most of the time, presented in a quite ‘natural’ environment, such as in ‘Born to Run’ (1974), ‘Badlands’ (1978), ‘Born in the USA’ (1984), etc. However, environmental characteristics in some of his recordings are often quite noticeable, and consequently quite important in terms of the musical materials ‘hierarchy’. For instance, Springsteen’s ‘My Hometown’ (1984) presents a voice with a loud short echo effect coupled with a short reverb. Even though we are still in a ‘possible’ space, listeners might start to notice the vocal effect in itself—just as in the case of Elvis Presley’s ‘Heartbreak Hotel’ (1956) already discussed in section 3.1.1.2.3 above. In fact, the short echo effect might indeed favour an association with nostalgia for the past because a similar kind of echo effect was widely used in 1950s rock’n’roll. Interestingly, a similar feeling of nostalgia emanates from Daniel Lanois’ ‘Death of a Train’ (1993), in which a very similar echo effect is used, again contributing to the creation of the nostalgic atmosphere.

In both cases the effect of contrast occurs on a paradigmatic level, since there are no syntagmatic contrasts—the setting remains unchanged for the whole song’s duration. Yet the environments used are still not too far from what can be heard in ‘real-life’; and as we have

seen, they even draw a parallel between a more recent ‘standard’ rock style and 1950s’ rockabilly.²⁶⁹ In fact, what seems to be an important feature common to all examples just discussed, including those of Springsteen and Lanois, is the relative *stability* of the environment used, i.e. an absence of diachronic contrast. Indeed, all recordings studied in connection with this work and taken as representative for much of the ‘standard rock’ repertoire present a voice with a *fixed* environment, as if the performer was singing in the same space throughout the whole song. We will now turn to recordings in which the use of particular (and often contrasting) environments illustrates a tendency toward a more technological aesthetic.

5.1.1.2.2. *Toward a Technological Aesthetic*

Peter Gabriel is renowned for his creative use of technology.²⁷⁰ Among the many examples found in his repertoire, I have chosen to discuss his use of reverberation in excerpts from ‘Blood of Eden’ (1992), which I will be comparing with George Michael’s ‘Jesus to a Child’ (1995). In both cases the chosen environment enhances high frequencies, apparently in order to support what is expressed through the lyrics. Gabriel’s ‘Blood of Eden’ presents an A₁-A₂-B₁-A₃-A₄-B₁-C-A₅-B₁-B₂ form (in which A_n stand for the verses, B_n for choruses and C for the bridge).²⁷¹ Each section, represented by a letter, presents (at least) one specific vocal

²⁶⁹ Rockabilly’s slap echo effect is certainly not anymore stylistically contrasting; on the contrary, it has become what Philip Tagg (1992) has rightly named a ‘stylistic indicator’, which he defines as ‘any musical structure or set of musical structures that are either constant for or regarded as typical of the “home” musical style by persons in a culture sporting at least two different musical styles. We are in other words talking about the *compositional norms* of any given style’.

²⁷⁰ Lacasse (1995) shows, among other things, how Gabriel is constantly exploiting vocal settings in ‘Digging in the Dirt’ (1992). Similarly, Umberto Fiori (1987) describes a contrast between the singer’s ‘cold’ attitude and the highly emotional lyrics in ‘I Have the Touch’, a contrast further enhanced by a vocal setting ‘robotizing’ Gabriel’s voice (see 5.5 for further comments). David Schwarz (1997: 87-99) also discusses Peter Gabriel’s ‘Intruder’, notably in terms of the way the voice is staged.

²⁷¹ See further discussion about this particular bridge section in 5.1.3.2.1 below.

setting, which already accounts for syntagmatic contrast typical of a technological aesthetic. For now, we will concentrate on the environment heard during the A sections, which is characterised by a high level of reverberation with reverb time of around two to three seconds. Furthermore, the reverb effect enhances high frequencies, and is thus triggered by most voiceless consonant sounds such as [s], [tʃ], [ʃ], [t], [k], [f], etc.²⁷² Interestingly, the song's lyrics are full of words displaying these sounds, most noticeably in the verse parts. For example, in A₁ (00:42-01:04)²⁷³ we have 'I caught sight of my reflection', 'I saw the darkness', 'I saw the signs', etc. In A₂ (01:07-01:29) we find 'And the darkness still', 'So secure', etc. There is even a line in A₅ (04:36-04:59) saying 'Watch each one reach for creature comfort'. In fact, and right from the outset, there is an obvious relation between the idea of 'reflection' in the first line and the long reverberation following the word. There is even some silence afterwards that helps put the effect in the foreground. This almost denotative relationship is further exploited in more metaphorical terms in the beginning of A₃ (02:10-02:34) when Gabriel sings 'My grip is surely slipping'. Here again, reverb is clearly heard because of [ʃ] and [s] consonants coupled with the presence of a short silence, and again reverb helps support the image conveyed by the lyrics (the slipping, the emptiness). This type of sound-lyrics relationship is also exploited in the George Michael song.

Contrary to Gabriel's 'Blood of Eden', which contains a number of different environments, George Michael's voice in 'Jesus to a Child' keeps the same setting for the whole song. However, the environmental characteristics of the setting are quite unnatural and are thus (paradigmatically) contrasting with what is susceptible to be heard in 'real life'.

²⁷² Pronunciation symbols follow those used in Greenbaum 1996: xi.

²⁷³ When referring to sound excerpts from recordings I will be indicating time references in brackets (00:00-00:00). In the case of repeated lines, I will refer to the first occurrence, unless otherwise specified.

Indeed, the environment's reverberation time is even longer (almost four seconds) than that of the Gabriel track. Also, a very strong emphasis, in fact stronger than in 'Blood of Eden' is placed on very high frequencies. Furthermore, Michael's voice sounds very close, even if we hear a very long reverberation.²⁷⁴ This contrast between apparent proximity of sound source and long reverberation is characterised by William Moylan (1992: 101) as 'unrealistic': 'Distance cues are often contradictory when a high degree of timbre detail and a large amount of reverberant energy in relation to direct sound are present simultaneously. This unrealistic sound may be desired for the artistic process [...]'.²⁷⁵ Moreover, as in Gabriel's song, lyrics present a high concentration of voiceless consonants, especially [s]. The combination of the sound [s] with this particular environment creates a very long effect of prolongation. In fact, it sounds as if high frequencies were almost always 'flying' or 'floating' over the overall texture during the whole song (except, of course, when Michael does not sing).²⁷⁶ This sense of floating is also supported by a number of other musical elements, such as the slow tempo, the relatively 'soft' instrumentation (including a classical guitar, a flute and a synthesizer string pad), as well as Michael's performance.

Now, some parallels might be drawn between the two songs, the most obvious one being the respective metaphorical reference to biblical icons, namely Eden and Jesus.²⁷⁷ Here, reverberation largely contributes to evoking this religious or spiritual connotation. Of course, this relation between spirituality and love is not new. For example, the Orioles' 'Crying in the

²⁷⁴ Distance is examined in 5.1.3 below.

²⁷⁵ See also Moylan 1992: 222-223.

²⁷⁶ Interestingly, the reverberated [s] constitutes the highest noticeable sound of the mix in terms of frequency content, even higher than the hi-hat, which typically displays the highest frequencies in most rock recordings, along with other percussive instruments such as the tambourine or the shaker. There is indeed a tambourine with long reverb in Michael's 'Jesus to a Child', but its level is lowered when the voice comes in.

²⁷⁷ See a comment by Gabriel about the use of biblical imagery in 'Blood of Eden' in note 290 below.

Chapel' (1953), a song renowned for its ambivalence between love and religious devotion (Garofalo 1997: 116), is also known for its use of reverberation, an obvious acoustic allusion to 'chapel'.²⁷⁸ In Michael's song, the interaction between lyrics and reverberation could also convey a feeling of solitude, of coldness, and of suspended time, apparently following a lover's death ('With your last breath you saved my soul' (03:29-03:34)). The relative simplicity of George Michael's song hides a potential richness of connotations for which the particular reverberation setting is significantly responsible. I would even consider reverb in 'Jesus to a Child' as one primary musical material, along with the lyrics, the melody and Michael's singing performance.²⁷⁹

Many other illustrations of the use of reverberation in the context of a technological aesthetic could be discussed, many of which display much more dramatic effects. I will simply refer to the Jimi Hendrix classic 'Purple Haze' (1967), in which we hear some vocal tracks with very heavy reverberation, in particular the vocal stream panned full left during the guitar solo (01:12-01:34), an effect well suited to the 'haze' in question...²⁸⁰ According to Moylan's nomenclature, such a reverberation effect would again situate the voice in some 'otherworldly' area. However, this time the voice sounds extremely distant, as if lost in some gigantic space. In other words, Hendrix's voice seems to be in an area 'where sounds appear to be at a distance outside of human experience or [...] located within environments that cannot exist on Earth' (Moylan 1992: 223).

²⁷⁸ See note 180 above.

²⁷⁹ Of course, it is possible that some listeners, particularly those who dislike George Michael's music, find a completely different set of connotations related to the presence of this reverberation. For example, some might find that it exaggerates a marked tendency toward an already excessive emotionalism, that it overemphasises an already 'larger than life' performance...

²⁸⁰ See section 5.2.1.1 for a discussion about psychedelia and vocal flanging.

5.1.2. Stereophonic Location

5.1.2.1. Definition

We have already encountered aspects of stereophonic location when discussing the impact of the advent of stereophony in section 3.2.2. Mono and bilateral double-tracking, as well as Automatic Double-Tracking (ADT) have also been briefly discussed in sections 3.1.3.1 and 3.1.3.2. We will nevertheless come back to these notions, attempting to define them more precisely as well as discussing some examples. According to William Moylan (1992: 48), ‘The stereo (lateral) location of a sound source is the perceived placement of the sound source, in relation to the stereo array’. Accordingly, there are many ways a sound source may appear to be ‘distributed’ along the stereo array. First, the sound source may be perceived as a ‘point source’, and will then appear ‘to have a physical size that is quite narrow and precisely located’ within the stereo array (p. 49). Second, the sound source may appear to have a given width, giving the impression of a spread image. Accordingly, ‘The size of the spread image can be considerable; it might be slightly wider than a point source, or it may occupy the entire stereo array’ (p. 49). This effect is often a by-product of other effects such as stereo phasing (5.2.1). Finally, following bilateral double-tracking (3.1.3.1) or stereo ADT (3.1.3.2), a sound source may appear to be coming from both sides of the stereo array at the same time, and therefore be leaving a ‘hole in the middle’ of the stereo array (p. 49). This particular configuration is mostly used for its euphonic quality, but can also give rise to contrasting effects.²⁸¹ Now, all these configurations might change in time. It is possible to hear, for example, a sound source that expands in time, passing from a point source that

²⁸¹ For example, in Alanis Morissette’s ‘You Oughta Know’ (1995)—which is further discussed in section 5.1.3.2.2 below—we hear a clear contrast between the centred ‘point’ voice during the verses and the bilateral voice during the B sections preceding the choruses (00:36-00:51; 01:51-02:06; 03:06-03:21).

occupies a very narrow area to a spread source covering a much wider area.²⁸² Finally, it is of course also possible to find a sound source that is *moving* across the stereo array (moving source). The following sub-section presents an example in which many of these possible configurations are found: the Beatles' 'A Day in the Life' (1967).

5.1.2.2. The Beatles' 'A Day in the Life' (1967)

As mentioned earlier (3.2.2.1), early stereophonic effects were rather limited because of the few available separate tracks (usually no more than four at the time of *Sgt. Pepper*). Consequently, 'In the stereo mix [of 'A Day in the Life'], Track 1 (the basic instrumental track) remains left, Track 3 (bass and drums) and Track 4 (orchestra and a little piano) center, and Track 2 (vocals) pans wildly all over the spectrum' (Everett 1999: 121). Everett (pp. 121-122) then cites Tim Riley's (1988) own (free) interpretation of the 'wild' vocal panning.

During the last lines of the first verse [00:44-01:45], Lennon's voice moves slowly from the far right toward the center as the song becomes more aware of itself and the music gains intensity [...]. By the end of the verse Lennon's voice has travelled all the way over the far left channel, and the journey of awestruck disbelief is complete.²⁸³

There are, however, other stereophonic effects heard in 'A Day in the Life' that are in my opinion equally evocative. First, there is McCartney's voice that is panned full-right during the second section of the song (02:21-02:49); contrary to Lennon's voice, which was given a loud echo effect, McCartney's voice sounds completely flat. This contrasting setting, which is the result of the combination of the full-right panning and flat voice, confers a

²⁸² This happens, for instance, in Annie Lennox's 'Money Can't Buy It' (1992). Indeed, Lennox's voice sounds spatially quite narrow until the bridge section (02:18-02:43) where a stereo phasing effect widens its stereo image. See 3.1.3.3 and 5.2.1.2 for further discussion about 'Money Can't Buy It'.

²⁸³ The panning movement is graphically represented in Moylan 1992: 217.

feeling of confinement that supports the attitude of the character who is stressed, late, and has to move. More importantly, it prepares for the following imminent contrasting effect heard during the famous ‘dream’ scene (02:49-03:16). Indeed, McCartney’s voice is suddenly affected with loud echo and reverberation. Moreover, it starts to move along the stereo array from right to left, and then back to right within a rather short amount of time (25 seconds). The combination of the sudden loud ‘otherworldly’ environment and the stereo movement gives the impression that the character has started flying over us—right after he had that ‘smoke’.²⁸⁴ Then, new contrast: in the song’s last section, Lennon’s voice is this time located on the far left—where it has landed by the end of the first verse—still with the loud echo effect, and stays immobile (03:18-03:52).

Toward the end of the sung section, however, we clearly hear effects of bilateral panning—probably resulting from stereo ADT (see 3.1.3.2). Besides its manifest euphony, the effect, which is heard on the final lines ‘[...] Albert Hall/I’d love to turn you on’ (03:41-03:51), brings some sense of spatial ‘relief’. Indeed, since the beginning of the song, voices were either stereophonically moving, or located at one or the other extreme of the stereo array. Now, by the end of the song, Lennon’s voice gets almost evenly spread along the stereo array, relieving the tension that has been previously created.²⁸⁵ In this example, vocal staging, and more particularly vocal stereophonic location, plays a determinant role, probably as determinant as other musical materials such as harmony, orchestration and even melody, to which much more attention has been paid to date.²⁸⁶ The next section deals with another

²⁸⁴ George Martin noticed that despite the fact that the ‘dream’ section was to him ‘no more than an inventive way of getting back to the original key’, ‘The vocal wailing [...] definitely contributed to its reception as a “marijuana dream”’ (cited in Everett 1999: 117).

²⁸⁵ A similar parallel tension is created with the help of the ever-rising orchestral parts that finally ‘resolve’ in the apparently never-ending final major chord *tutti* (04:21-05:04).

²⁸⁶ For additional analytical comments on ‘A Day in the Life’, see Moore 1997: 52-57.

aspect of spatialisation, distance, which should also be considered as an important and powerful musical parameter.

5.1.3. Distance

5.1.3.1. Definition

Distance can be defined as the perceived location of a sound source along the depth of a recording's virtual sound stage. The sound source will be perceived as sounding from a given distance within a given environment. The fundamental parameter responsible for the perception of distance is the timbral definition of the perceived sound source. More precisely, 'Distance is perceived as a definition of timbral detail, in relation to the characteristics of the environment in which the sound is produced' (Moylan 1992: 211). This timbral definition could be compared to visual definition (image resolution) in relation to perception of distance. For example, the small-scale sailing ship located by my living room's window will appear to have the 'same' dimension as the actual sailing ship crossing the sea a kilometre away and that I admire from the same window. In other words, taken in the context of the frame created by the window, both ships will appear to measure, say, 50 centimetres long. However, the 'real ship' will have a far lesser degree of definition than the small-scale one, which will both inform me about their respective distance and real dimension.²⁸⁷

As far as sound is concerned, it is neither the level of reverberation alone, nor the sound's loudness alone, nor than the original distance between microphone and sound source

²⁸⁷ I am of course deliberately not mentioning the notion of perspective, which would unnecessarily complicate the analogy.

that are solely responsible for a given effect of distance.²⁸⁸ Rather, the effect is produced by a *combination* of such elements. The interaction between these parameters will provide the perceived sound source with a specific timbral quality: ‘Timbre differences between the sound source as it is known in an unaltered state and the sound as it exists in the host environment of the recording are the primary determinants of distance localization’ (Moylan 1992: 219). On a more aesthetic level, Rudolf Arnheim (1936: 84) argues that every effect of distance has its own expressive value: ‘With the help of distance it is possible to introduce a perspective vector in the dramatic situation [of a recording] similar to the “shooting angle” in photography and film’ (p. 86). The following sub-section shows some potential ‘expressive value’ presented by effects of distance, mostly by concentrating on vocal ‘close-up’—a vocal staging effect I consider particularly effective.

5.1.3.2. Study of Examples: Close-Up Voice

5.1.3.2.1. Peter Gabriel’s ‘Blood of Eden’ Revisited

As an illustration of a creative use of distance, we will first study the bridge section (3:28-4:23) from Peter Gabriel’s ‘Blood of Eden’ (1992).²⁸⁹ By its very nature, a bridge section is contrasting. Consequently, elements belonging both to music and lyrics are used to create the desired effect. In ‘Blood of Eden’, many musical elements help in producing a

²⁸⁸ William Moylan (1992: 218-219) further details the distinction: ‘Many activities of other artistic elements are confused with distance. Distance is not loudness. [...] Loudness does not directly contribute to distance localization in audio recordings. [...] Distance is not the amount of reverberation placed on a sound source. [...] reverberation contributes to the listener localizing distance, but it is not the primary determinant of distance location, in and of itself. Distance is not the perceived distance of the microphone to the sound source that was present during the recording process. [...] Microphone to sound source distance contributes to the overall sound quality of the source’s timbre. It contributes to the listener localizing distance, through definition of timbral detail, but it is not a primary determinant of distance localization, in and of itself’.

²⁸⁹ It is worth mentioning that the bridge section has been mixed *separately* by a different sound engineer (Richard Chappell) and re-inserted afterwards within the song’s final mix. See liner notes in Gabriel 1992: [17].

contrast with what precedes. From the outset, we hear an interrupted cadence (V-vi) that already contributes to creating a contrasting atmosphere. The contrast is further enhanced by the relative thinness of the instrumental texture. Drums and percussions cease to play, the rhythm being only subtly outlined by the few remaining instruments, such as the bass and the fading-in guitar that are accompanied by a floating synthesizer pad. All these musical features help enhance another contrast, that of the specific vocal setting heard during the bridge. Gabriel's voice suddenly seems much more present, just as if we were passing from middle distance to close-up. Besides the changes in instrumentation just mentioned, the effect of distance contrast is created by the combination of a number of technical manipulations: besides the fact that Gabriel was manifestly recorded very close to the microphone, the voice is clearly louder, highly compressed, and with little reverberation. When listening with headphones, it is almost as if Gabriel's voice was suddenly entering our head, being as close as it can be.

The auditory contrast, and the vocal setting particularly, greatly enhances the shift that also occurs in the lyric's narrative. Contrary to what has been previously sung, and which was in the form of a descriptive narrative, the bridge section depicts an intimate and privileged moment as experienced by the character, most probably occurring in the context of sexual intercourse.²⁹⁰ The character starts addressing his unheard partner who 'take[s] [him] in' at his own request. Time is suspended, 'Holding still for a moment'. The lack of rhythmical reference enhances this impression of suspended time as much as the voice foregrounding

²⁹⁰ Here is Gabriel's own description of the song: "'Blood of Eden' is fairly obviously about the failure of a relationship and the moments of trying to work it through, making love in a moment of storm. I wanted to use the biblical image in 'Blood of Eden' because it was the time when man and woman were in one body, and in a sense in a relationship, in making love, there's that sort of struggle to get some form of merging of boundaries, a real powerful union' (O'Hagan 1992: 4-5).

enhances the image of intimate fusion. In that example, it is thus in the context of ‘A moment of bliss’ that an effect of close distance is used. The foregrounding of voice, however, can assume a quite different role, as the following example will show.

5.1.3.2.2. Alanis Morissette’s ‘You Oughta Know’ (1995)

Even though most rock recordings display one type or another of reverberation or echo affecting the voice, we have seen that it is possible to find vocal environments (totally) devoid of reverberation. We have already defined flat voice as well as discussed quite extensively its implications in section 2.3.1.3.1, where I have argued, along with Rudolf Arnheim (1936: 99), that the most likely interpretation of an acousmatic voice displaying no reverberation would be to hear that voice as sharing, or as sounding inside, the listener’s own environment.

Among examples in the recorded rock music repertoire that illustrate this potential effect of private invasion we find Alanis Morissette’s ‘You Oughta Know’ (1995).²⁹¹ The main character of ‘You Oughta Know’ is a woman whose ex-boyfriend has quickly started a new relationship right after leaving her: ‘It was a slap in the face how quickly I was replaced’ (01:41-01:46). The character thus expresses her disappointment and rage towards her ex-lover, notably by telling him that even though she ‘hate[s] to bug [him] in the middle of dinner’ (01:37-01:41), she is ‘here to remind [him]/Of the mess [he] left when [he] went away’ (00:54-01:03). The main character is thus more or less invading her ex-lover’s privacy manifestly in order to bother him; a situation Morissette’s vocal setting helps support. Indeed, right at the beginning of the song, we hear Morissette singing the apparently benevolent

²⁹¹ Sam Brown’s ‘Stop’ (1989) would probably constitute another good example.

opening lines: 'I want you to know that I'm happy for you/I wish nothing but the best for you both' (00:00-00:17). However, having the lines sung in a quite aggressive/sarcastic fashion provokes an effect of ironic contrast. Besides this aggressive/sarcastic attitude, the voice sounds very close and completely flat, producing an effect of foregrounding further enhanced by a quite high level of compression. Moreover, the minimal instrumentation of the opening measures contributes to the voice's predominance in the mix. The listener, then, metaphorically takes the role of the ex-lover and is literally invaded by Morissette's disturbing voice.

5.1.3.2.3. Björk's 'Hunter' (1997)

A similar effect of close distance is found in Björk's 'Hunter' (1997), a recording definitely tending toward a technological aesthetic. Indeed, not only are the sounds almost all produced electronically (except maybe for an accordion), but the voice too is highly processed. Moreover, settings change often, sometimes suddenly. Most of the time, however, Björk's voice displays a setting characterised by a mixture of filtering, flanging and echo, whose respective dosage evolves in time. But suddenly, the voice's setting becomes completely 'unprocessed' and flat when Björk sings the song's main line, 'I'm the hunter' (00:54-00:58). This diachronic effect of contrast is very effective. On the level of internal relations, we can note that the flat setting is exclusively reserved for that single recurrent lyric line. The repetition of the effect, then, acts structurally (internal relation), somehow *confirming* what has been already said. Furthermore, the effect might evoke a kind of aside (see 2.3.1.3.2 above). It sounds as if the character is suddenly turning to us at a very close distance, as if we were directly addressed by the momentarily flat voice. Interestingly, sound theorist Rick Altman (1992d: 61) asks what is a flat voice?

On the one hand, to be sure, it is close-up sound, sound spoken by someone close to me, but it is also sound spoken *toward* me rather than away from me. Sound with low reverb is sound that I am meant to hear, sound that is pronounced *for me* [...].²⁹²

In our example, not only is the voice completely dry and flat, but also the setting occurs suddenly, greatly enhancing the effect described by Altman through a significant contrast. Furthermore, The flat setting might also be interpreted as a moment of complete opening up from the part of the character, who momentarily shares with us her profound nature, maybe discovering it at the same time. The interaction between words and the setting can even give rise to a subtle feeling of fear or anxiety: the character, who is a ‘hunter’, is suddenly extremely close to us, dangerous maybe... Of course, we could have looked at examples where voice seems to sound from a long distance; but since an example of it has been already briefly discussed in section 5.1.1.2.2 above, and that another will also be studied later in a different context (5.3.2), we shall now turn to settings related to timbral modification.

5.2. *Prôsôpon*: Electric Alteration of Voice Timbre

5.2.0. *Introduction*

William Moylan (1992: 13) defines timbre as ‘a composite of a multitude of frequency functions and amplitude displacements—the global result of all the amplitude and frequency components that create the individual sound’. The composite in question constitutes the

²⁹² Elsewhere, Altman (1995: 105) illustrates the idea differently: ‘Suddenly, a [...] voice pierces the air. I still can’t understand the words but the ratio of direct to reflected sound is quite high; this caller is clearly facing in my direction, calling me and no other. I immediately straighten up and respond: “Yes, what do you want?” When the reverb disappears, I know that the message is for me. I know that I have switched from the overhearing mode to the discursive mode, the mode where people look at me, talk to me, care what I think, want to make sure that I hear. For the standard of intelligibility, of limited reverberation, is ultimately a standard of for-me-ness, of implicit discursivity’.

timbre's spectrum, which will be characteristic of a given sound source. It is thus through the recognition of the sound source's spectrum that we are able to identify a sound source: 'A sound's spectrum is comprised primarily of harmonics and overtones that create a characteristic pattern that is recognizable as being characteristic of a particular instrument or voice' (Moylan 1992: 15). Moylan (1992: 25) continues:

Humans have the ability to recognize and remember a large number of timbres.

Further, listeners have the ability to scan timbres and relate unknown sounds to sounds stored in the listener's long-term memory.

Consequently, any transformation of a given familiar timbre will be very easily perceived.

This is all the more true with voice, which constitutes the most familiar timbre of all, or, as Richard Middleton (1990: 262) puts it, 'the profoundest mark of the human'. Here is a quote by Middleton already cited in 0.1.3.2.1 that sums up the ins and outs of the question:

[...] vocalizing is the most intimate, flexible and complex mode of articulation of the body, and also is closely connected with the breath (continuity of life; periodicity of organic processes). Significantly, technological distortion of voice-sound (through use of a vocoder, for example) is far more disturbing than similar treatment of instrumental playing (which is regarded usually as a logical extension of manual performance).

From an aesthetic point of view, the specific timbre of a sound source and its alteration can lead to a series of effects similar to the ones provoked by spatialisation (see 5.1.0 above).

The sound quality of a sound source may cause a musical part to stand out from others or to blend into an ensemble. In and of itself, it can convey tension or repose, or lend direction to a musical idea. It can also add dramatic or extramusical meaning or significance to a musical idea. Finally, the sound quality of a sound source can, itself, be a primary musical idea, capable of conveying a meaningful musical message (Moylan 1992: 44).²⁹³

There are many ‘mechanical’ ways of modifying a voice’s timbre, like mirlitons encountered in section 1.2.1, or simply by cupping hands in front of the mouth. However, recording techniques have hugely increased the range of sounds available from a vocal source, for example by passing the voice through ‘black boxes’ such as fuzz, flangers, telephones, and so on. In the following sub-sections, we will study the possible impact of some of these effects.

5.2.1. Phasing

5.2.1.0. Introduction

We have already defined and discussed some aspects of phasing in section 3.1.3 above. In the present section, we will be looking at a series of recordings including voice affected with electronic phasing and, more particularly, flanging effects. The aim is to find the possible range of connotations aroused by the effect, mostly by identifying correlations between the presence of phasing and what is suggested by the lyrics. When discussing Miss Toni Fisher’s ‘The Big Hurt’ (1959) in section 3.1.3.3, we encountered the interpretation of a fan who noted that the effect of flanging was ‘making for a strange dreamlike atmosphere to

²⁹³ Moylan (p. 25) goes further and argues that ‘Humans remember timbres as conceptions, as entire objects having an overall quality (that is, comprised of unique characteristics), and sometimes as having meaning in itself (as timbre can bring with it associations in the mind of the listener)’. This idea of humans’ ability to segregate and isolate discrete sound constituents is supported by empirical observation; see note 228.

go with the song lyrics'. We will thus attempt to describe as precisely as possible—without restricting the possible arborescence of phasing's potential connotations—the 'atmosphere' in question by identifying what seems to be common among the studied examples.

5.2.1.1. Psychedelic Flanging

Musicologist Allan Moore (1993: 68) writes that 'The use of phasing on the voice was a late-1960s metaphor for psychedelia'. This interpretation of phasing in the context of the late 1960s indeed seems quite right. For example, The Small Faces' 'Itchycoo Park' (1967)—which has been wrongly considered by many as containing the first occurrence of flanging (see 3.1.3.3 above)—is clearly related to psychedelia, not only because of Small Faces' association with the musical trend of the time, but also because of the lyric content. The main character, who describes a place that is 'all too beautiful', is asked 'What did you do there?'. 'I got high' he answers. Moreover, the excerpts during which we hear the phasing effect start with the line 'I feel inclined to blow my mind'. A similar association with drugs, hallucination and psychedelia may be found in Status Quo's debut single 'Picture of Matchstick Men' (1968) in which we hear a flanging effect during the chorus: 'Pictures of matchstick men and you/Mirages of matchstick men and you/All I ever see is them and you'. Elsewhere in the song we find other allusions to hallucination: 'When I look up to the sky/I see your eyes in funny kind of yellow'. Jimi Hendrix, whose association with the psychedelic trend is unnecessary to stress, has used flanging on many occasions, perhaps most notably on the voice in the almost electroacoustic track 'And the Gods Made Love' (1968) from *Electric Ladyland*. According to Richie Unterberger, in *Electric Ladyland* Hendrix 'took psychedelic experimentation as far as he could [...]. That meant pushing the barriers of late '60s studio

technology as far as they could bend, particularly with regard to multitracking and effects that could only be achieved through certain treatments and manipulation of the tape itself'.²⁹⁴

There is also the famous Beatles' 'Tomorrow Never Knows' (1966) that presents a strange effect on the voice, close to flanging. The lyrics were apparently taken from 'a set of instructions for a drug-enhanced search for spiritual bliss given in *The Psychedelic Experience*, an interpretation of the Tibetan Book of the Dead [...] written by Timothy Leary and Richard Alpert' (Everett 1999: 34-35). Accordingly, Lennon had the following conception of the song: 'I'd imagined in my head that in the background you would hear thousands of monks chanting. That was impractical of course and we did something different' (cited in Everett 1999: 35). George Martin recalls that Lennon 'wanted to sound like a Dalai Lama singing on a hilltop [...]. So I put his voice through a loudspeaker and rotated it. It actually did come out as that strangled sort of cry from the hillside' (cited in Everett 1999: 36). The loudspeaker in question was a Leslie rotary speaker that produced an effect very similar to flanging, mostly resulting from the Doppler effect caused by the two revolving horns.²⁹⁵ The effect is heard during the second part of the song (01:26-02:50) and is accompanied by numerous other sound effects: sounds recalling some 'artificial' birds, reverse guitar licks, heavy compression on drums, etc., all of which imparts a quite psychedelic connotation in the context of the song.

²⁹⁴ Richie Unterberger. <http://allmusic.com/cg/x.dll?p=amg&sql=A9212>. (Visited 29 February 2000). As already mentioned, flanging was done through tape manipulation at the time (see 3.1.3.3).

²⁹⁵ The Doppler effect occurs when either the sound source or the receptor is moving. A common example of a Doppler effect is an ambulance siren when it passes by. The siren's pitch seems to increase while it is coming toward us, and then decreases while it is moving away.

5.2.1.2. Phasing and Inner Turmoil

We have already mentioned Jimi Hendrix's use of flanging in 'And the Gods Made Love'. A clear flanging effect is also applied to the voice in Hendrix's 'Burning Of the Midnight Lamp' (1968), a song related to loneliness rather than to some psychedelic vision or feeling: 'So lonely/Gonna have to blow my mind/Lonely (03:18-03:28).²⁹⁶ Similarly, later occurrences of vocal phasing and flanging effects are quite rarely associated with 1960s psychedelia. On the other hand, and as partly demonstrated by Hendrix's example of loneliness, presence of flanging still seems to have something to do with the expression of some kind of inner 'turmoil' or 'malfunction'.²⁹⁷ For example, we can hear a flanged voice in 'Amnésie' (1996) by Guesh Patti. More precisely, the effect is systematically affecting the chorus phrase 'mon amnésie (my amnesia)', which of course can be (even metaphorically) considered as inner malfunction. Still in the realm of French-language music, there is a phased voice in Québécois Daniel Bélanger's 'Sortez-moi de moi' (1996). Here again, the effect is heard during the chorus and mostly affects the chorus main line, 'Sortez-moi de moi' (Get me out of myself). The song is about someone who is completely turned inward on himself, living his life within his inner world: 'Et moi j'étais sur moi alors/J'écoutais couler dans mes veines/Mes vaisseaux et mes anticorps' (And me, I was over me then/I was listening to my vessels and antibodies/flowing in my veins) (01:03-01:20). The character then asks to help him get out of himself ('Sortez-moi de moi'): inner turmoil once again. We have already mentioned in 3.1.3.3 the phasing effect applied to Annie Lennox's voice in 'Money Can't Buy It' (1992) characterised by 'the thin, flanged vocal timbres capturing the fragility and searching quality of the lyrics' (Hawkins 1996: 25). Indeed, the effect occurs in the bridge

²⁹⁶ Hendrix's voice is also located on the extreme left.

²⁹⁷ In fact, one could even relate the early 'The Big Hurt' (1959), already discussed in section 3.1.3.3, with inner (affective) turmoil.

section whose opening line, 'Won't somebody tell me what we're coming to' (02:18-02:24), denotes the character's inner fragility and insecurity. A very similar association with what 'lies under' is brought on in Seal's 'Bring It On' (1994) when, during the bridge section, a very noticeable flanging effect affects the voice when Seal sings 'So what lies under/Is your Kingdom Come?/Chase It way,/Down low' (02:55-03:12). Appropriately, a sudden decrease in the sound texture's density leaves much room for the effect to be brought to the foreground.²⁹⁸

As another cry for help, Jars of Clay's 'Flood' (1995), whose lyrics are more or less depicting spiritual uncertainty, also presents a very noticeable effect of flanging over the second chorus' phrase 'Keep me from drowning again' (01:54-01:58). The song exploits a metaphorical relation between water and spirituality: 'My world is a flood' (00:17-00:19). The main character is trying to get out of water (read 'turmoil') and asks somebody, probably God or Jesus, to lift him up. The effect of flanging occurs just before a very contrasting section during which voice is heard along with a string quartet.²⁹⁹ Interestingly, a similar metaphorical relation between drowning and phasing is established in Manfred Mann's 'Drowning on Dry Land/Fish Soup' (1978), a phasing that is affecting both synthesizers throughout the song and Chris Thompson's voice during the coda when he sings the song's main line, 'Drowning on dry land' (04:39-04:45), accompanied by heavy phased guitar chords.³⁰⁰ Here again, the main character expresses inner turmoil, related to his solitude:

²⁹⁸ However, the flanged voice is virtually always there at varying degrees. Interestingly, we find excerpts with a noticeably higher level of flanging; for example, on phrases like 'illusions in my mind' (00:30-00:34) and 'psychedelic tendencies of love' (00:55-00:59), supporting some of our previous observations.

²⁹⁹ There is even another song that is also called 'Flood' (1997) by Junkhouse that also uses the metaphor of water and rain. Here again we hear phasing in the voice, along with other effects. See section 5.2.2 below for further discussion about that particular recording.

³⁰⁰ The voice is then affected with a long echo until the end of the song.

‘Sitting in a silent room/The walls around me screaming/Rely on nothing wait on no-one’
(00:08-00:22).

5.2.1.3. Phasing and Invisibility

Apart from evoking these (extramusical) connotations, phasing is also acting on a more musical level, notably by bringing an additional euphonic quality to the voice it is affecting, and often ‘stereotising’ it. This stereo expansion of the voice makes it spatially diffuse and thus difficult to localise.³⁰¹ Numerous examples of euphonic uses of phasing effects are, for example, heard in techno and dance music. Interestingly, however, there is an intriguing case of a techno song with a spread euphonic phasing effect whose lyrics are *also* related to the inner world, except that this time it is not the main character’s subjective turmoil which is illustrated, but rather her potential power over her ‘victim’. Indeed, the female voice in Tilt’s ‘Invisible [Original Vocal Edit]’ (1999) sings ‘Listen to my voice/You won’t see me/You won’t see me with your eyes [...]/You will feel me deep inside’ (00:40-01:07). In fact, the stereo phasing effect—along with long echo—used in that song helps support the character’s omnipresence and ethereality.³⁰² I would even say that though she is ‘Invisible’, it is through the sound of her voice that the main character virtually takes existence: she *is* the acousmatic voice: ‘I am feeling invisible/You won’t see me anywhere’ (01:08-01:20). The listener, who is virtually taking the role of the victim, is thus ‘possessed’ by the sound of her voice: ‘I am emotion’ and ‘When you’ll need me/I’ll be there’; ‘You will feel me deep inside’. Of course, songs such as ‘Invisible’ definitely tend toward a full

³⁰¹ This diffuse image of a sound source within the sound stage corresponds to William Moylan’s (1992: 49) ‘spread image’ already described in section 5.1.2.1 above.

³⁰² There is a long version remix of the song, ‘Invisible [Lost Tribe Vocal Mix]’ (1999), in which we hear the lines ‘I’m everywhere/But you cannot see’ (05:45-06:00). The voice is then heavily processed with stereo phasing, short stereo echo and long echo.

technological aesthetic; therefore, use of effects such as phasing and echo is not surprising. Consequently, there are no strong effects of stylistic contrast: it is rather the interaction between the lyrics and the music that give rise to potential connotations.

There is a more direct association with notions of invisibility and potential aggression in Pulp's 'I Spy' (1995) in which a clear effect of stereo phasing is applied to the voice in a large portion of the song, and is especially loud on the chorus line 'I spy'. Not only could the phasing effect be related to the spying obsession itself (inner turmoil) as expressed by the main character who spies on a couple: it also seems to support the image of an *access* inside the couple's inner world: 'I know the way your minds work; I have studied/And your minds are just the same as mine' (01:44-01:52). Moreover, the spy in question has apparently already invaded their intimate world: 'I've been sleeping with your wife for the past sixteen weeks/Smoking your cigarettes/Drinking your brandy/Messing up the bed that you chose together' (03:00-03:12).

5.2.1.4. Phasing and Psychoacoustics

As already mentioned, in nature, sound sources or receptors that are in motion may give rise to phasing effects (Doppler effect). For example, a person emitting vocal sounds while moving quickly toward a reflecting wall will hear a clear phasing effect.³⁰³ It is in this way that the idea of motion and its corollary, instability, are related to phasing, an association that reception test respondents have in part confirmed.³⁰⁴ One could then relate this apparent

³⁰³ Emitting vocal sounds while quickly moving hands toward and away from the mouth can produce a similar effect.

³⁰⁴ Subjects thought the flanged voice was quite unstable and moving a little. See Table 4.3-1 above.

‘physical’ instability to the ‘inner’ instability it seems to evoke. For example, the main character’s obsession depicted in Pulp’s song is close to manifestation of insanity.

Interestingly, Denis Vasse (1974: 203-204) relates insanity to the voice’s evasive spatial location.

One could even say that insanity is voice without location. And madness’ intolerable character consists precisely in that a voice cannot be conceived without a given location, without a location from where it comes and to where it returns. Without a location, voice is inconceivable, mad, and aberrant: a voice always strange and alien which never lands nor rests anywhere; unreal. A voice that cannot commune with itself anymore in a location that characterises it and specifies it, is literally the voice of all and none, failing to commune with itself in the silence of the body.³⁰⁵

This description corresponds rather well with effects of phasing—and especially when stereotised: a phased voice is moving, unstable, and therefore always spatially evasive, never specifically located.

Further ‘physical’ associations between auditory flanging and natural visual phenomena are possible. We have already mentioned the link between water and flanging (5.2.1.2). Another similar synaesthetic connection was suggested to me by Québécois singer-songwriter Daniel Lavoie, who told me that he once applied flanging on his voice in order to sonically represent the visual waving we sometimes observe at high temperature—on a shore by the sea, or when ‘seeing’ a desert mirage, for example.³⁰⁶ All these more or less physical

³⁰⁵ ‘On peut aussi bien dire que la folie est une voix sans lieu. Et l’intolérable de la folie est précisément qu’une voix ne peut pas se concevoir sans lieu, sans le lieu d’où elle vient et où elle retourne. Sans lieu, la voix est inconcevable, folle, aberrante : une voix toujours étrange et étrangère qui ne se pose et ne se repose nulle part, irréelle. Une voix qui ne peut plus se recueillir en un lieu qui la caractérise et la spécifie, est littéralement la voix de tous et de personne, échouant à se recueillir dans le silence du corps’.

³⁰⁶ The waving in question is of course caused by light diffraction due to localised variations of the air’s temperature. See also Tagg (1979: 111-121) on *tremolando* figures and glittering surfaces.

associations thus suggest that most connotations described in this section might find their evocative origins, at least partly, in psychoacoustics (see 6.2.1). In conclusion, despite the numerous examples enumerated in this section, I do not intend to say that *all* cases of flanged voice are expressing some inner turmoil or other specific connotations. I simply want to show that phasing is propitious for evoking such feelings and that its single presence might incite the listener to make such connections. The same is true for other settings, such as the one we will be examining next: saturation.

5.2.2. Saturation

Saturation (or distortion) is usually associated with guitars.³⁰⁷ It is notably that effect that gives the instrument its characteristic thick timbre and sustain. In fact, saturated guitars have become the norm in many styles of rock music gravitating around heavy metal. Originally, the effect was produced by saturating the guitar tube amplifier. Then, guitarists such as Jimi Hendrix or Santana started to use external devices such as the famous ‘Big Muff’ fuzz box or other pre-amplifiers. There are a number of examples, however, in the recorded rock repertoire of *voices* heard with a similar saturated sound.³⁰⁸

The first recent example that comes to mind is Nine Inch Nails whose singer-songwriter-producer, Trent Reznor, is often heard with a heavy saturated voice. One explicit example is found in the chorus of ‘Heresy’ (1994) in which Reznor sings the unambiguous lines ‘God is dead/And no one cares/If there is a hell/I’ll see you there’ (00:50-01:06).

³⁰⁷ Generally speaking, ‘distortion’ can refer to any kind of transformation, manipulation, or aberration. It is why I have preferred the term ‘saturation’.

³⁰⁸ A possible first example of a rather distorted voice can be heard in Joe Hill Louis’ ‘She May Be Yours (But She Comes to See Me Sometimes)’ (1953, recorded 1952) recorded by Sam Phillips. The effect seems to have been obtained by passing the voice through a saturated guitar amplifier.

Interestingly, the reception test has shown equally unambiguous results (see tables 4.3-1 and 4.3-3) regarding saturated voice, which has been considered as the most aggressive and most malevolent setting. There is no doubt that Reznor's performance can be perceived as aggressive, an attitude the saturation certainly supports—along with the rest of the musical arrangements. But Reznor is neither the only one, nor the first, to have applied saturation to his voice.

A similar effect of vocal saturation can be heard in King Crimson's '21st Century Schizoid Man' (1969). As in the Nine Inch Nails song, lyrics are tainted with 'aggressiveness' and 'malevolence', depicting, for example, scenes of violence and war: 'Blood rack barbed wire/Politicians' funeral pyre/Innocents raped with napalm fire' (01:21-01:31). Even the Beatles have used saturated voice in 'I am the Walrus' (1967), described as 'a wonderfully dark, snide portrait of unstable unfortunates' by Walter Everett (1999: 133), and whose surrealistic and ambiguous lyrics often present images of violence and death, potential or actual: 'See how they run like pigs from a gun' (00:30-00:33), 'Yellow matter custard dripping from a dead dog's eye' (01:35-01:42).³⁰⁹ Moreover, 'the coda of "I Am the Walrus" is darkened by a death scene (Act IV, scene vi, ll. 224-25 and 251-59) from the ferocious and bewildering tragedy of *King Lear* [...]' (Everett 1999: 134). Finally, another saturated voice is heard in the chorus of Junkhouse's 'Flood' (1997) as the main character sings 'Why am I breakin' up/Because I can't calm down' (01:00-01:15).³¹⁰ Again, images of natural disaster and destruction are presented in the lyrics. The effect thus communicates the high tension felt

³⁰⁹ Interestingly, there is also phasing in Lennon's voice, which supports images of insanity and psychedelia evoked in the song.

³¹⁰ The effect is supported by loud heavy guitars.

by the character who, according to songwriter Tom Wilson, experiences ‘High anxiety’.³¹¹ Interestingly, besides the saturation, and as mentioned earlier (see note 299), there is a clear effect of phasing during the verses which ‘accounts’ for the apparent inner turmoil. This alternation between phasing and saturation thus seems ‘appropriate’ and certainly supports what is expressed in the lyrics.³¹²

5.2.3. Other Types of Alteration

There are many other possible ways for altering voice’s timbre. The vocoder, for example, can be used to ‘reproduce’ a ‘machine’s voice’, or to communicate a feeling of ‘high technology’, as heard in many songs of the disco era. At the same time, the vocoder manifestly also has a euphonic side. For example, it is possible to ‘harmonise’ the sung passage by controlling the voice through a keyboard. In section 0.1, we also mentioned Cher’s ‘Believe’ (1998) whose vocoder effect could also be characterised as ‘euphonic’. Telephone effects are also often heard in the repertoire, and are particularly interesting in that they seem to connote an interesting paradox: intimacy, but at a distance. According to Paul Zumthor (1983: 236), the telephone is capable of poetical effects, imposing on the listener someone else’s voice, conveying an erotic charge, latent or manifest (see note 250). The effect of spatial distance, which has been clearly perceived by the subjects of the reception test (see Table 4.3-3), can also be metaphorically transposed to the idea of a *temporal* distance.³¹³ Accordingly, we find many songs whose lyrics allude to past events, notably with the help of

³¹¹ Tom Wilson. <http://www.junkhouse.com/jh/flood.html>. (Visited 8 March 2000).

³¹² See additional discussion on saturation and aggressiveness in section 6.2.1.

³¹³ Here again, telephone has been considered as one of the three settings responsible for conveying a sense of ‘pastness’ (see Table 4.3-3).

a ‘telephoney’ voice.³¹⁴ In the next section, we will be precisely exploring this notion of temporality, an aspect of sound that recording technology allows us to exploit rather easily.

5.3. **Chronos: Manipulation of Voice in Time**

5.3.0. **Introduction**

5.3.0.1. **Time and Repetition**

In his categorisation, William Moylan does not consider time as a distinct aspect of sound in the same way as with timbre and space. Rather, Moylan is considering time either as a general feature of music—which he graphically represents in terms of a ‘time line’ (Moylan 1992: 156-160)—or as part of other characteristics of sound such as space—for example, the reverberation time characteristic of a given environment—or timbre—for example, very short delays giving rise to phasing effects.³¹⁵ Consequently, Moylan does not treat settings such as long echoes as *temporal* effects. He rather more or less includes them within the ‘space’ category.³¹⁶ Although I agree that echo definitely communicates (some) ‘spatial’ information (for example, flutter echoes in small reflective rooms or long echoes around lakes and mountains) I have decided to explore these settings from the perspective of *repetition*.

More precisely, this section deals with effects of repetition following electronic manipulation of sound. I will concentrate on two particular cases of electronic effects of

³¹⁴ There is, for instance, Nancy Dumais’ ‘Ton visage’ (1997) in which we hear a clear telephone effect and whose lyrics recall past events, the main character trying to remember her first lover’s face.

³¹⁵ In this particular respect, Moylan (p. 13) considers time as responsible for ‘the fusion of the many frequency and amplitude anomalies of the single sound to create a global complex waveform’.

³¹⁶ In his book, Moylan (1992: 139-144) devotes an entire section to time in the context of editing (‘Editing: Suspension of Time’). However, the section only concentrates on editing of the *master tape*, which does not account for effects such as reiteration (5.3.2) and other editing effects.

repetition, namely *long echo* and *reiteration*.³¹⁷ In the case of a long echo, the repeated sound follows almost *immediately* the original sound, only separated by a given time delay—typically ranging from roughly 300 milliseconds to two seconds (sometimes longer). It frequently happens that repetition starts before the affected word or phrase is actually completed. This phenomenon leads to overlapping. Echo will thus appear to be somehow *attached* to the original sound event it is affecting.³¹⁸ On the contrary, reiteration is characterised by a significant *temporal distance* between the original sound event and its repetition. Typically, reiteration of a given sound event occurs several seconds, or even minutes after the original sound event has occurred, both events being interspersed by long passages.³¹⁹ It is common to hear a reiteration of an original sound event in a different formal section of a song. Consequently, a reiteration will seem to be much more *detached* from the original sound event than echo. This does not mean, however, that there will be no perceived relationship between a given sound event and its reiteration. Rather, the effect produced by these two kinds of repetition will simply be *different*, a difference that sections 5.3.1 and 5.3.2 will attempt to illustrate.

5.3.0.2. Autosonic Identity

The particular nature of repetition manifested by echo and reiteration is, in my opinion, strongly related to an important property of recorded sound that I have elsewhere

³¹⁷ See section 3.1.1.1.1 for a distinction between long and short echo.

³¹⁸ John Hollander (1981: 1) writes that ‘An echo of any given delay—say of a full second [...]—will only clearly return sound of that duration or less; the primary sound of a longer phrase of speech or music will interfere with the sound of the echo, and only the last second’s worth of the phrase will be heard unconfused with its source. It is for this reason that echoes seem to return fragments of speech’.

³¹⁹ Reiterated sound events are usually short, like one word or phrase.

called *autosonic* identity.³²⁰ Autosonic identity can be defined as a kind of ‘physical’ identity between two sound events separated in time. Because of this physical identity, the two events will appear to be a *single* event that has been repeated in time. The notion of autosonic identity can best be understood by way of comparison. Take, for example, the case of sampling. It is possible to import an excerpt (called *sample*) from one recording into another recording. Now, what is common to both recordings, after the ‘copy and paste’ procedure—either through tape or digital editing—is of a *physical* nature, different if one would have tried to *re-perform* the excerpt in question.³²¹ In other words, a sample sounds *exactly* like the excerpt it has been copied from, while a re-performance would sound *similar*, a difference that humans are of course able to perceive.

The only case of autosonic identity found in nature is the phenomenon of echo. It is indeed the only acoustical way for a human being—or any other ‘sound emitting’ being—to hear the sound of his/her own voice outside from the frame constituted by his/her own body.³²² With sound recording, it becomes possible to have faithful ‘acoustical duplicates’. Reciprocally, ‘Tests have shown that it is physically impossible for nature’s most rational and calculating being to reproduce a single phoneme in his own name twice in exactly the same manner’ (Schafer 1977: 90). Again, acoustical echo or audio recording would be needed to

³²⁰ For a detailed discussion of autosonic identity in the context of intertextual quotations in recorded music, see Lacasse 2000b.

³²¹ This ‘reconstruction’ would then be qualified as ‘allosonic’. I am of course here partly and freely drawing from Nelson Goodman’s terminology (‘allographic’ and ‘autographic’) as introduced in Goodman 1968. Again, see Lacasse 2000b for more details.

³²² John Hollander (1981: 1-2) writes that ‘Until an astoundingly late moment in the history of technology—that of Edison’s sound transcription—the only means of perpetuating sound per se (as opposed to writing and musical notation, which preserve instructions for producing it) were echoes, and perhaps parrots (save for the charming fable of frozen echoes, or the voices of mariners flung up from shipboard in wintry northern seas, and released again in summer thawing)’. The case of parrots—or any other forms of imitative performance—is of course allosonic. For a rather convincing psychoanalytic possible explanation of the listener’s pleasures and displeasures when listening to a reproduced voice in general, and of his/her own voice in particular, see Lawrence 1988.

‘simulate’, so to speak, the effect ironically described by Schafer; and it is precisely toward this kind of sonic identity that the term ‘autosonic’ is pointing. With this in mind, we will now briefly study long echo and reiteration which are notably characterised by their autosonic nature.

5.3.1. Long Echo³²³

5.3.1.0. Introduction

As already suggested in section 1.1.1.1.1 above, the physical phenomenon of echo has fascinated humans for a very long time. It is thus not surprising that echo has been used as a figure in many forms of expression, notably in mythology and poetry. John Hollander (1981: 6-22) identifies two opposite general patterns of association that appear very early in the mythography of echo, both strands deriving from the original fables of Pan and Narcissus, the former being rather ‘positive’, the latter more ‘negative’. Thus, the first positive trend, originally deriving from the Homeric Hymn to Pan, would be related to the gods, the mountain, the pastoral, the celestial (pp. 9-11). On the other hand, the more negative strand of interpretations, this time deriving from Ovid’s famous story of Echo and Narcissus, associates echo with lost love, mockery and nostalgia (pp. 11-12). Following this distinction, I would like to examine two different effects of echo; one more ‘rhythmical’ (musical/lyrical), and that we could more or less relate to the Pan strand, and the other more ‘nostalgic’, with which I shall begin.³²⁴

³²³ See 3.1.1 above for a definition and introductory discussion about echo.

³²⁴ There are of course other more obvious effects of echo, such as the simple fact of emphasising a given word, or sonority.

5.3.1.1. Nostalgic Echo

I have always been fascinated with the nostalgic feeling echo was arousing in me when listening to certain recordings or when performing. I was thus happy to come across Michel Imberty's psychoanalytic explanation according to which echo would remind the listener of what Imberty calls 'this *inaugural instant of time*' (1993: 55),³²⁵ i.e. this moment when the child experiences for the first time a separation from the mother.

What I am suggesting is that musical echo refers to the most archaic temporal experience, that which initiates a first confused intuition of the Self as 'frame of reference' [...]. But at the same time, this initial experience of time is only partial. Echo is always the reflection of what has already occurred, of what is irremediably lost (Imberty 1981: 182-183).³²⁶

In other words, when the subject experiences its first separation from the object, he/she would experience a fundamental duality: that of a loss combined with the 'discovery' of his/her own existence.

I was therefore rather surprised when I heard the following lyrics during the bridge section of U2's 'Mofo' (1997): 'Mother am I still your son/You know I've been waited for so long to hear you say so/Mother you left and made me someone/Now I'm still a child but no one tells me No' (02:43-03:16). Interestingly enough, this passage is quite close to what Imberty is describing: a kind of ambivalence between the loss of something and the desire to become autonomous. I was even more surprised when I realised that this passage was the only

³²⁵ '[...] cet *instant inaugural du temps*'.

³²⁶ 'Ce que je suggère, c'est que l'écho musical renvoie à l'expérience temporelle la plus archaïque, celle qui amorce une première intuition confuse du Soi comme « cadre de référence » [...] Mais en même temps, cette première expérience du temps n'est que partielle : l'écho est toujours le reflet de ce qui est déjà passé, de ce qui est irrémédiablement perdu'. For a similar psychoanalytic interpretation of the myth of Echo see, among others, Hannan 1992; Lawrence 1988.

time during the whole song when there was a clear echo effect on the voice (around 500 milliseconds with at least three repetitions). Moreover, the effect is brought to the fore because of the relatively light sound texture that suddenly contrasts with what precedes: we hear Bono's voice only accompanied by a sequenced bass line and a sustain guitar located on the extreme left. Of course, I am not saying that every time we hear echo in a pop song, we are in the presence of some sort of psychoanalytic illustration of a mother-child separation. Recorded rock music is full of excerpts presenting long echo with lyrics having a completely different narrative. Again, all I am trying to do is to foreground the *potential* evocative power held by vocal staging. I believe, however, that this particular type of emotive connotation is most likely to be (unconsciously or not) aroused in listeners.³²⁷

5.3.1.2. Rhythmical Echo

As already suggested in section 3.1.1.2.3 above, besides the type of connotations just described, echo has a clear impact on the music itself, and more precisely on rhythm. This is all the more true for longer echo effects which render rhythmical interaction between the original sound and its repetition(s) even more noticeable.³²⁸ We have already mentioned the important role echo seems to play in certain types of dance or techno music (5.0.2.2).

Obviously, the rhythmical aspect of echo is strongly related to the importance of rhythm and

³²⁷ During a personal conversation, sound engineer and producer Daniel Coulombe suggested a different (or complementary) explanation for the nostalgic power of long echo. According to him, it would also have something to do with the sequenced decrease in sound level of the (exact) repetition(s) in time. This would communicate a sense of increasing distance between the subject and him/herself: a kind of a subjective effect of psychological 'self-distanciation' resulting from the combination of a temporal (repetitions) and spatial (decrease in loudness) autsonic effect of distance.

³²⁸ Of course, I am taking for granted that echo and its repetition(s) are separated according to a delay time that is proportional with the song's tempo. Non-proportional delay times would give rise to some 'rhythmical dissonance'. An effect of that sort is heard during the introduction (00:13-00:38) and ending (03:26-03:52) of Radiohead's 'Planet Telex' (1994) in which a keyboard sound is affected with electronic filtered echo/tremolo. Because the echo's delay time is not exactly proportional to the song's tempo, it gradually interferes with the overall rhythm, giving rise to some sense of instability.

pulsation in dance music. Accordingly, in recordings associated with these genres, voice is often almost treated as a musical instrument, the words being often more or less exploited for their mere phonetic quality.³²⁹

Peter Gabriel's dance remix of 'Kiss That Frog' constitutes, in my opinion, a good illustration of such a rhythmical use of echo. Indeed, in the sung sections of Gabriel's 'Kiss That Frog [Mindblender Mix]' (1993), we can hear very clearly an echo whose repetitive pattern has an influence on the whole mix's rhythmic structure. Interestingly, the original version of 'Kiss That Frog' (1992b) which appears on the *Us* album does *not* have any echo on the voice—just a quite natural environment. The only lyrics we hear in the remix version come mainly from the original version's second verse.³³⁰ Moreover, some lines have been literally cut out in the remix arguably in order to leave space for the echo effects to be properly heard. It has to be mentioned that there are two kinds of echo effects heard in the remix. One is a 'standard' long echo which is rhythmically proportional (triplets) to the recording's tempo (96 BPM).³³¹ The other effect is a sort of 'reverse' echo that *precedes* the vocal stream it is attached to.³³² Figure 5.3-1 below presents a comparative graphic

³²⁹ Moreover, several recordings played in discotheques are remixes of earlier released songs. It is thus assumed that original versions of the remixes are already known. For a discussion about remixes and their relation to intertextuality, see Lacasse 2000b.

³³⁰ Some back vocals are preserved, as well as lines from the ending section.

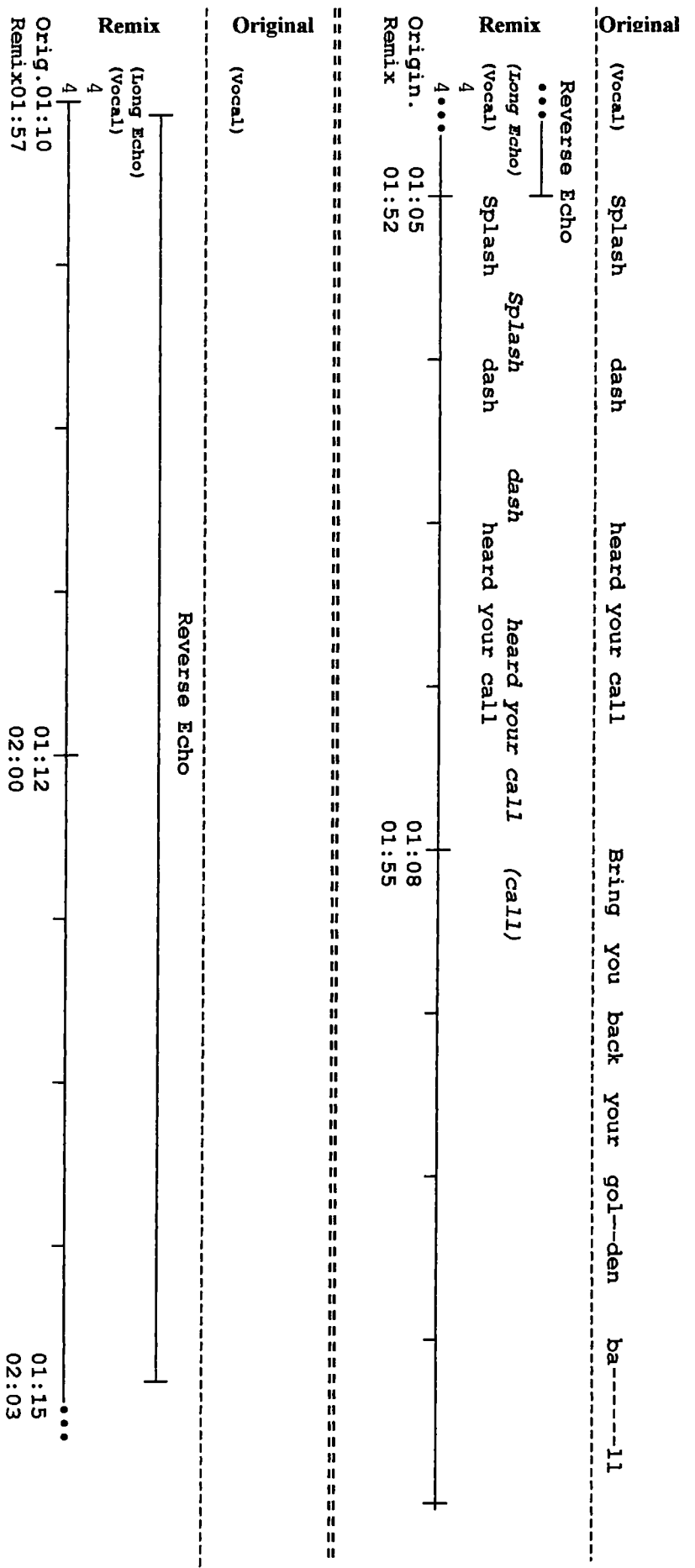
³³¹ Tempos are slightly different: 93 BPM for the original version and 96 BPM for the remix.

³³² This effect could be treated as a different temporal effect; but for the sake of this example, we will consider it as a particular case of echo effects.

representation of both the beginning of the second verse in the original version and the remix's corresponding section.³³³

³³³ Each segment of the time line represents one beat. Time indications underneath the time line correspond to the original and remixed versions respectively. Corresponding lyric lines and echo effects are given over the time line.

Figure 5.3-1: Peter Gabriel's original and remixed versions of 'Kiss That Frog'



When looking at Figure 5.3-1, we see that the second line of the original version's verse is omitted in the remix version, leaving some space for the echo to finish resounding. Similarly, in the following two bars (01:57-02:03) of the remix we hear a long reverse echo effect, while in the original version's corresponding section (01:10-01:15) there is no vocal at all. In fact, what is heard in the original version are guitar and organ licks. Listening to the remix, we feel that the reverse echo effect, which much denaturalises Gabriel's voice, literally acts as a musical instrument. Similar treatment of the voice is found throughout the remix of 'Kiss That Frog'. The reverse echo provides an additional powerful rhythmical element to the overall texture.³³⁴

Long echo effects can of course convey a large number of other connotations depending on the context. Moreover, the evocative power of echo most probably results from a combination of its 'rhythmical' and 'nostalgic' sides. In this section I wanted to explore what I consider to be two extremes of the range of possible effects produced by echo in music.³³⁵ Echo, like other vocal staging effects, has some impact on both the intra- and

³³⁴ Experimentations in Jamaican dub music by artists such as King Tubby in the late 1950s should probably be considered the starting point of such a tradition of the use of 'lyrical-rhythmical' echo in remixes: 'It was while working with [Duke] Reid that Tubby began what seemed to be a deceptively simple bit of experimentation: he would remix songs starting by dropping the vocal track, boosting parts of the instrumental track (e.g., suddenly there would be nothing but bass or rhythm guitar), and add subtle effects like echo or delay to the instruments he had isolated. The immediate impact of this process of dub mixes was that songs became hits twice (John Dougan. <http://allmusic.com/cg/x.dll?p=amg&sql=B34109~C>, visited 3 March 2000).

³³⁵ Interestingly, when discussing echo *versus* reverberation, Murray Schafer (1977: 218) starts by admitting that both effects may have some convergent connotations: 'Early sound engineers sought to carry over special acoustic properties [...] into the ziggurats of Babylon and the cathedrals and crypts of Christendom. Echo and reverberation accordingly carry a strong religious symbolism'. This religious connotation has indeed been perceived by subjects of the reception test (see Table 4.3-1 above). Then, Schafer starts to make a distinction between echo and reverberation: 'But echo and reverberation do not imply the same type of enclosure, for while reverberation implies an enormous single room, echo (in which reflection is distinguishable as a repetition or partial repetition of the original sound) suggests the bouncing of sound off innumerable distant surfaces. It is thus the condition of the many-chambered palace and of the labyrinth'. I would associate this latter comment on echo with our 'rhythmical' echo because of the multiple reflections Schafer evokes. Finally, he expands on another aspect of echo, which is closely related to our 'nostalgic' echo: 'But echo suggests a still deeper mystery. [...] every reflection implies a doubling of the sound by its own ghost, hidden on the other side of the reflecting surface. This is the world of alter-egos, following and pacing the real world an instant later, mocking its follies'.

extramusical levels. However, echo, because of its autosonic nature and its mythography, seems richer and therefore would deserve a whole study in itself. Nevertheless, I would like to turn now to another similar temporal effect, namely reiteration.

5.3.2. Reiteration

As defined in 5.3.0.1, reiteration can be understood as an autosonic editing effect, resulting from some kind of ‘copy and paste’ procedure. While an example of reiteration is discussed in the following section (5.4.2.2.1), I would still like to examine an interesting case of this temporal effect occurring in Massive Attack’s ‘Unfinished Sympathy’ (1991). The reiterated vocal sound event, which is first heard during the introduction (00:17-00:22) is a melodic line presumably performed by vocalist Shara Nelson. The line is first reiterated in full two bars later (00:25-00:30). Then, it comes back regularly throughout the song: twice after the first verse (00:59-01:04; 01:07-01:12), twice again after the second verse (01:41-01:46; 01:49-01:55), then one truncated occurrence after the first chorus just before a piano solo (02:08-02:10). It is finally regularly reiterated after the last chorus toward the end of the song.

What characterises the reiteration, besides its autosonic nature, is both its relatively low sound level and its very high level of reverberation. The reiterated fragment is then perceived as being far away, sometimes barely audible. This particular staging effect attributed to the reiterated fragment contributes to make it sound as a distinct musical element, literally separated from the lead vocal line which sounds much closer. In fact, the fragmentary character of the reiteration seems to illustrate what is expressed by the chorus lyrics: ‘Like a soul without a mind/And a body without a heart/I’m missing every part’ (01:58-

02:04). Moreover, the high level of reverberation further supports the image of a disembodied being.³³⁶ Toward the end of the song, some of the late occurrences of the fragment are even further manipulated, sounding as if it would have been recorded on a vinyl disc and then manipulated by a D.J. The resulting effect is quite strange, and one could feel the fragmented voice somehow represents the main character's loss of control and hesitation toward a potential lover, probably because she has suffered before: 'I know that I've been mad in love before/And how it could be with you/Really hurt me baby [...]/You're the book that I have opened/And now I've got to know much more' (00:34-01:00).

It is of course possible to produce numerous other 'temporal' editing effects, most of which revolve around the technique of overdubbing. However, some of these techniques have already been explored in this dissertation, such as double-tracking (3.1.3.1; 3.1.3.2), and overlapping and self-harmonisation (3.1.1.2.2). Consequently, we will now turn to the next and last section of this chapter which presents an analysis of the use of vocal staging in one particular song.

³³⁶ It also has to be mentioned that there is a noticeable echo effect on the voice during the chorus, bringing a further nostalgic note to the whole thing. Other musical features, such as the loud string pad and the often strange harmony it outlines—especially toward the end—definitely contribute to the song's overall emotional content.

5.4. Analysis of Alanis Morissette's 'Front Row' (1998)

5.4.0. Introduction

This last section is devoted to a brief analysis of Alanis Morissette's 'Front Row' (1998) that should serve as a general illustration of the potential evocative power of vocal staging. Instead of looking at isolated vocal settings, we will now attempt to describe vocal staging's articulation within a single piece of recorded music. Interestingly, and as already mentioned (5.0.1), 'Front Row' presents many different vocal settings that occur either diachronically or even synchronically, giving rise to a quite high number of potential connotations and effects of contrast. Moreover, settings appearing on 'Front Row' act on all three aspects of sound presented earlier in section 5.0.1 (Table 5.0-1): space (different environments; effects of distance; different stereo locations), timbre (telephone effect; flanging) and time (reiteration; editing effects such as overlapping and harmonic overdubbing). The aim of such an analysis is not to propose a complete exegesis of what the artist has tried to communicate; rather, the idea is to use the song as a source of possible associations, connotations and intramusical effects the presence of vocal staging might give rise to. In other words, the aim of this analysis—as well as the whole dissertation—is to demonstrate the *evocative potential* of the practice of vocal staging. As in the preceding sections, the analysis will mostly be based on text-music relationships with strong emphasis on vocal settings; but we will also refer to external information in order to support our observations.³³⁷

³³⁷ A similar approach has been used in Lacasse 1995.

5.4.1. General Considerations

5.4.1.1. Lyrics

As already mentioned, we will not attempt to provide a ‘faithful’ interpretation of the song’s lyrics. As an illustration of the difficulty of such an enterprise, here are three different interpretations found in reviews.

The album’s opening cut features a rambling, conversational lyric [...]. [Morissette is] trying to talk herself out of initiating a relationship. You get the feeling she won’t succeed.³³⁸

What would it [be] like to be Alanis Morissette’s friend or family member? In an edgy clutter of funk and ghostly voices, she tries to imagine.³³⁹

[...] on the percussion-heavy, mid-tempo ‘Front Row’, [Morissette] deals with a possible long-distance lover [...].³⁴⁰

Morissette provides her own description of the song:

[...] a stream of consciousness recounting three separate conversations with people or situations that inspired me in some way. The chorus allows me to express how privileged I feel to be able to be intimate with these people, to provide an environment for them in which they can feel safe... where I can see all parts of them without judgement.³⁴¹

According to Morissette’s description, one feels that all three previous interpretations found in the reviews are somehow ‘valid’; or, at least, that they represent different plausible

³³⁸ Dave Veitch. http://www.canoe.com/JamAlbumsM/morissette_a_junkie2.html. (Visited 22 February 2000).

³³⁹ Mike Ross. http://www.canoe.com/JamAlbumsM/morissette_a_junkie3.html. (Visited 22 February 2000).

³⁴⁰ Jane Stevenson. http://www.canoe.com/JamAlbumsM/morissette_a_junkie4.html. (Visited 22 February 2000).

³⁴¹ Alanis Morissette. <http://www.repriserec.com/alanis/cmp/songs/front.html>. (Visited 22 February 2000).


perspectives on the same text. The lyrics indeed sound like a kind of rambling conversation, memories and inner thoughts patched together. It also seems to have something to do with a lover (real or hypothetical) and with relatives ('I know he's blood'). Finally, we feel that much of the lyric is self-exploratory, and Morissette's very quick delivery is undoubtedly associated with the notion of 'stream of consciousness' she herself evokes.³⁴² Another interesting lyrical feature is the presence of parallel lines in choruses where we hear two simultaneous vocal streams. The main vocal stream is singing a recurring sequence coming back in each chorus ('I'm in the front row/The front row with popcorn/I get to see you/See you close up').³⁴³ In contrast, not only do the lines sung by the second vocal stream change from chorus to chorus: they are also barely intelligible because of the electronic processing applied to the same vocal stream. As the reader shall see, this matter is of particular relevance to our analysis.

5.4.1.2. Form

'Front Row' evolves according to a very simple form within which verses and choruses invariably alternate: $A_1-B_1-A_2-B_2-A_3-B_3-A_4-B_4$ (where A_n refer to verses and B_n to choruses). Figure 3.1-1 presents an overview of the song's form along with indications regarding vocal streams and their respective settings. On top of the formal grid (providing the song's formal sections, bars and timings) vocal streams have been distributed on two layers,

³⁴² Interestingly, the graphic presentation of the lyrics in the CD's booklet illustrates this idea of a continuous 'stream', having the lines written without interruption, without 'new lines'.

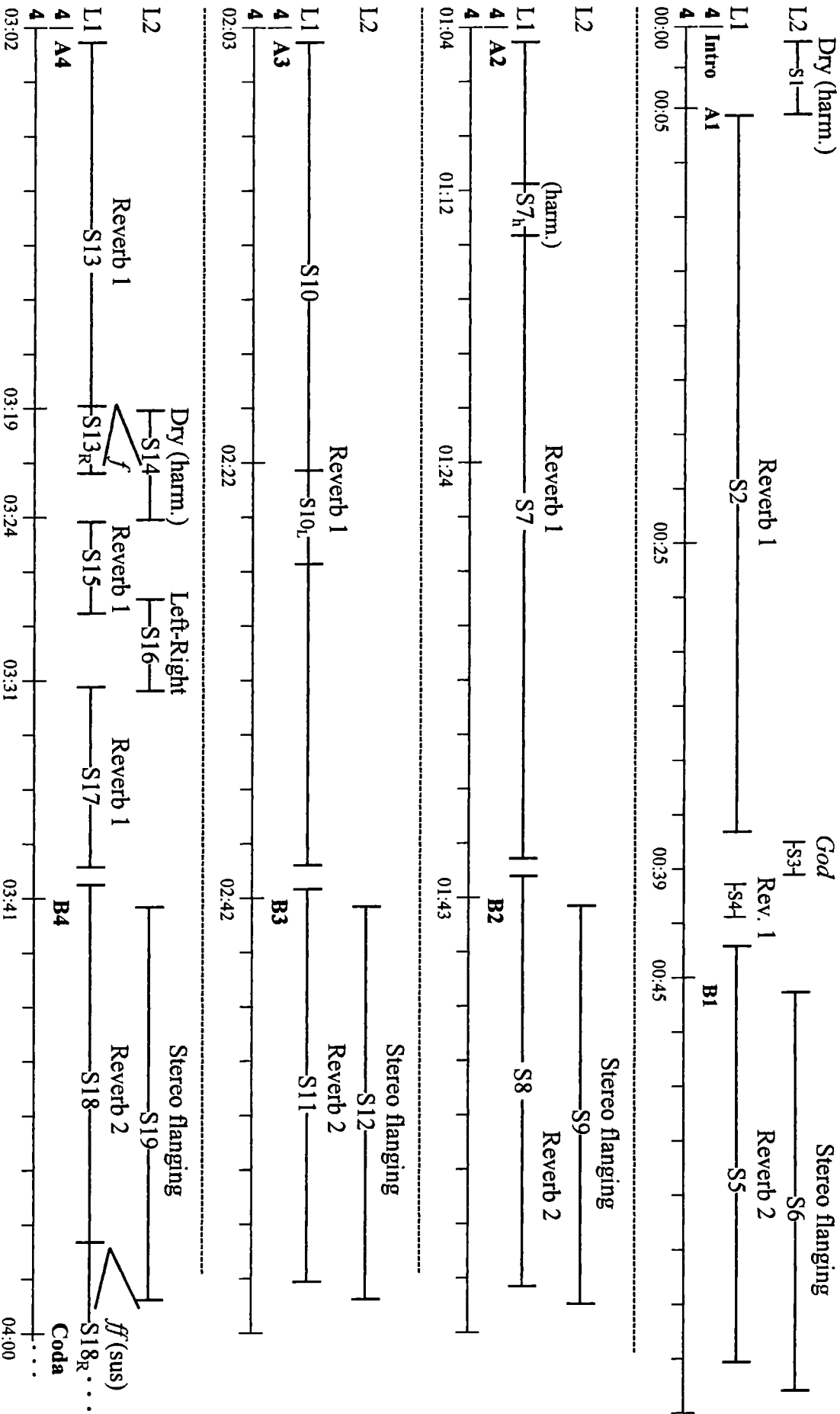
³⁴³ The chorus lyrics could be taken literally as a representation of someone sitting in a film theatre before her beloved, yet unreachable, favourite actor appearing on the screen. Of course, it rather seems to be a metaphorical representation of the intimacy the character shares with a number of different people (close friends, lovers, relatives), all of which somehow populate the lyrics.

L1 and L2.³⁴⁴ It is not suggested through this dual distribution that there are necessarily only two vocal streams; rather, the idea is mainly to allow the listener-analyst to visualise vocal overlapping and superposition.³⁴⁵ Along each layer, vocal streams displaying a particular setting are represented by a graphic line , on top of which the corresponding vocal setting label is indicated (reverb 1, stereo flanging, etc.). In order to facilitate the analysis, each of these sub-streams is numbered from S1 to S18. Finally, Morissette's vocal lines are sometimes sung in harmony (with herself), in which case 'harm.' is added in brackets, either right next to the setting's name (when the harmony affects the whole corresponding stream), or near the formal grid (thereby indicating where the harmony occurs within a given stream).

³⁴⁴ For a theoretical presentation of a stratified model including layers, see Moore 1993: 31-32. See also Lacasse 1995 for application of Moore's model.

³⁴⁵ As for the exact number of vocal streams in Morissette's song, one could say that there are two, three, or even more, according to his/her own mode of perception. However, because of overlapping, one can be sure that there are at least two vocal streams.

Figure 5.4-1: Alanis Morissette's 'Front Row' (1998)



5.4.2. Discussion

5.4.2.1. General Observations

From a first look at Figure 5.4-1, we see that streams and the attribution of their respective settings follow almost systematically the song's formal structure. For example, all choruses show the combination of two streams, each displaying a given recurrent setting ('reverb 2' on Layer 1, and 'stereo flanging' on Layer 2).³⁴⁶ Also, it is quite easy to identify within each structural section (verses and choruses) a predominant stream *versus* one or more contrasting ones. In choruses it is quite obvious that the stream appearing on L1 is predominant, both because it is louder and because its corresponding lyric is intelligible. Moreover, it carries the recurrent lyric line typical of the chorus.³⁴⁷ The case of verses is a little different in that they sound as if a main vocal line was occasionally interspersed with contrasting smaller streams or 'variations' within a same stream.³⁴⁸ From that perspective, contrasting streams within the choruses operate synchronically, while contrasting streams within verses are more acting diachronically—although some effects of overlapping induce brief moments of synchronic contrasts. The following more detailed analysis is articulated according to the song's formal sections, mostly because of the structural coherence described above. Of course, a particular attention will be given to the aspect of contrast.

³⁴⁶ Such structural correspondence is of course not surprising when vocal staging is considered as a full musical parameter in the same way as other traditional parameters such as harmony or melody. For a presentation of technological musical parameters as integral part of the musical 'arsenal', see Lacasse 1995.

³⁴⁷ As a matter of fact, for the sake of clarity, and when possible, predominant streams are located on L1 while L2 is devoted to contrasting streams.

³⁴⁸ For example, the short harmonised passage occurring in A2 from 01:12 to 01:14 sounds as if it was part of S7; it is why the contrasting sub-stream has been labelled S7_b.

5.4.2.2. More Detailed Observations

5.4.2.2.1. Introductory line

At the very beginning of ‘Front Row’, we hear S1 sung in harmony and *a cappella*. Apart from a very subtle environment—probably the sound of the room in which the voices have been recorded—there is no added reverberation. What is interesting about S1, however, is its direct relation to S14 heard later in the fourth verse (A4). Indeed, S14 is an autosonic reiteration of S1. The only feature that differentiates the two streams is S1’s equalisation, which accentuates mid frequencies to the point of approaching a ‘telephone’ effect; otherwise, one stream is the exact replication of the other. Now, from a strict chronological perspective, S14 sounds like a reiteration of S1 (since S14 occurs after S1); but from a narrative point of view, S1 rather seems to somehow ‘anticipate’ S14. Analogous visual effects can be found in cinema, as, for example, in Woody Allen’s *Deconstructing Harry* (1997), in which, right from the outset, we see a repeated sequence during the opening credits. Later, this particular sequence is exactly (autographically) reiterated. This kind of rhetorical effect, which is frequently used in cinema—as well as in other forms of expression—is called, following the classic rhetorical figure, ‘prolepsis’. In cinema, ‘prolepsis’ is defined as an editing effect that announces an ulterior event, in opposition to ‘analepsis’ which is a flashback.³⁴⁹

Now, in Morissette’s song, the general feeling of hesitation, of oscillation between the character’s desires and her actual actions, is already contained in S1 lyrics: ‘I know he’s blood but you can still turn him away/You don’t owe him anything’ (00:00-00:04), and is

³⁴⁹ Bernard Toulemeonde and Pascal Colombani. <http://www.education.gouv.fr/bo/1998/47/ensel.htm>. (Visited 6 March 2000).

therefore anticipating the whole song's emotional state. It is partly the autasonic identity of S1 and S14 that helps the listener relate the two streams in such a way that the relation can potentially give rise to the rhetoric effect of prolepsis.³⁵⁰ Moreover, the additional effect of limited frequency spectrum—close to a telephone effect—is probably largely contributing to provide some sense of temporal anticipation.³⁵¹ Indeed, the almost 'telephone' effect contrasts with what is heard right after, thus somehow 'announcing' its future reiteration in the last verse.

5.4.2.2.2. Verses

As mentioned earlier, verses are interesting in that apart from the attribution of a common main environment (reverb 1), predominant streams are sometimes interspersed with smaller additional streams, often overlapping with the main ones. This certainly helps illustrate the various 'streams of consciousness' (see 5.4.1) that the song seems to want to depict. Starting with A₁ (00:05-00:45), we hear a quite (diachronically) contrasting setting on the word 'God' (00:39). Interestingly, the 'God' setting consists of a very high level of reverberation with a quite long reverberation time, typical of very large environments such as concert halls, caves or cathedrals. This effect of 'sonic painting' is further brought to the fore by the short silence (of about one second) that immediately follows the word, thus leaving some space for the reverb to resound. The interaction of the word 'God' with the sudden large

³⁵⁰ As a matter of fact, this particular line is *not* given as the introductory line in the CD's booklet, just as if the initial occurrence (S1) would have been done at a later stage of production, after the booklet was printed. On the other hand, S14 is presented in brackets, a graphic feature that is to be used for other particular sub-streams discussed here.

³⁵¹ Indeed, when looking at the reception test's overall results (Table 4.3-1) one can see that a voice with a telephone effect has been perceived as quite distant (2); moreover, some sense of temporal 'pastness' also seems to be conveyed by the telephone effect: -0,5 toward 'past' (passé) and -1 toward 'old' (ancien).

environment obviously brings in a religious connotation.³⁵² We then come back with the initial setting, reverb 1, for the last phrase of the verse (S4).³⁵³ In the second verse (A2), the only contrasting element is the short harmonised fragment heard with the words ‘(let’s) name thirty good reasons’ (01:12-01:14). Besides its obvious euphonic effect—which, by the way, is often used in rock music for adding some element of variety—it is interesting to note that it emphasises an action presumably involving more than one character, i.e. to find a number of reasons for staying together.³⁵⁴ Similar to A2, A3 is notably characterised by a quasi-absence of contrast. However, there is a very subtle increase of the voice’s sound level during the segment ‘I’ve been wanting your undivided attention’ (02:22-02:27), represented by the sub-stream A10_L. During this segment, Morissette’s actual performance intensity is at a quite low level.³⁵⁵ The contrast between Morissette’s performance intensity and her vocal sound level within the mix provides some sense of momentary closeness and intimacy, which of course supports both the lyric content and the emotional information conveyed by Morissette’s performance.

³⁵² Subjects of the reception test perceived reverberation as conveying a quite sacred connotation (a score of –2 on the ‘Sacré/Profane’ scale).

³⁵³ In fact, one could of course either consider S2 and S4 as a continuous stream interrupted by S3, or consider S2, S3 and S4 as one and a same stream within which there is a sudden environmental shift. The favoured graphic design only aims at facilitating a visual representation of what is heard in terms of contrast.

³⁵⁴ One could even relate this presence of harmony and its reference to the presence of numerous beings with the introductory line discussed in 5.4.2.2.1. Indeed, the hesitation we have then evoked could be either thought of as an inner dialogue between two sides of a single character, or as a representation of a group of persons (such as close friends or relatives) advising the main character, somehow in the tradition of the Ancient Greek chorus. As a matter of fact, the use of backing vocals in rock music would constitute an interesting object of study.

³⁵⁵ Performance intensity can be defined as the actual level the artist was originally performing when recorded—the artist was actually shouting or whispering, for example. A distinction has to be made between this performance intensity and the sound level, which refers to the level at which a given recorded sound source is played back in a recording. William Moylan (1992: 45–46) writes that ‘Much dramatic impact can be created by sending conflicting loudness level and sound quality information—a loud whisper, a trumpet blast heard at *pianissimo*’.

Contrary to the relatively low contrasting effects presented in the previous verses, A4 is the song's section in which appears the highest number of contrasting sub-streams.³⁵⁶ This higher number of contrasts corresponds to the even more ambiguous lyrics, which seem to shift from one 'stream of consciousness' to another at a higher pace than before. The first effect of contrast is a gradual augmentation of reverb (S13_R) on the phrase 'come here let me clip your wings' (03:16-03:20), culminating in the prolongation of the word 'wing', which itself overlaps with the next segment, our already mentioned S14.³⁵⁷ As in the case of S7h discussed above, the effect is occurring in the context of someone else's intervention since the corresponding phrase constitutes a (hypothetical) quote from another imagined character. It is into the middle of this fantasmatic inner scenario that S14 filters. S14 contrasts with what precedes both because of its harmony and the sudden shift of environment (much less reverb than S13_R). This staging effect supports the lyric's narrative structure, which is itself contrasting. Indeed, until that point in the verse, what we hear sounds like an imagined dialogue between the main character and someone else, or at least as if the main character is addressing someone else. There is indeed a narrative shift in S14, in that the main character apparently starts to address herself, or is imagining someone else's address directed toward her: 'I know he's blood but you can still turn him away/You don't owe him anything'.³⁵⁸ This shift is thus supported (or suggested) by the vocal staging contrast. A little later, a movement within the stereo array produces another effect of contrast when Morissette sings 'Unfortunately you needed a health scare to reprioritize' (03:28-03:32). Until then, the voice

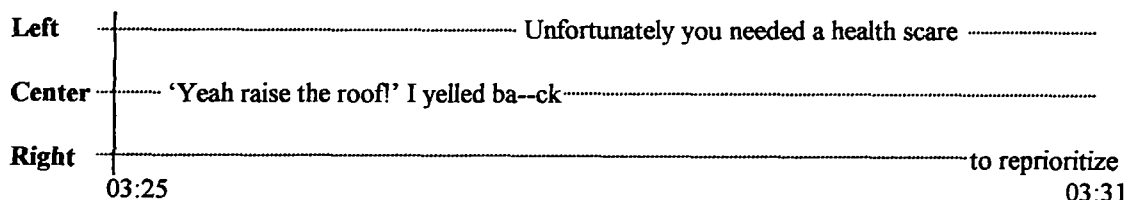
³⁵⁶ Ironically, the opening line of A₃ says 'you know how much you hate to be interrupted' (02:05-02:08).

³⁵⁷ Because of the gradual augmentation it is clear that we perceive S13_R as part of S13, hence the labeling.

³⁵⁸ Once again, the contrast is graphically represented in the CD's booklet, the segment in question being put in brackets.

in verses is centered; but suddenly Morissette’s voice is first panned full left and then full right in the course of S16, as graphically represented in Figure 5.4-2.

Figure 5.4-2: Stereo Movement (Alanis Morissette’s ‘Front Row’)



Within the context, this vocal staging effect seems to evoke some kind of remarks made to the main character by some very known persons (such as parents, for example), or by herself. The staging contrast also has the effect of detaching S16 from the main stream, again suggesting the insertion of a new ‘stream of consciousness’, probably with no real logical connection to what preceded it.³⁵⁹ Finally, the verse ends with S17 leading to the last chorus.

5.4.2.2.3. Choruses

As stated earlier, choruses are characterised by the co-presence of two streams heard simultaneously. The two streams are easily discriminated by their respective settings. The main streams (S5 in B1; S8 in B2; S11 in B3; S18 in B4) display an environment characterised by a quite high level of reverberation (reverb 2), higher than that displayed by the verses’ main streams. Of course, this environment shift—along with a several other parameters (harmony, instrumentation, overall texture, etc.)—is also partly responsible for a subtle diachronic contrast marking the passage from verse to chorus. The sung lyrics are

³⁵⁹ Once again, the contrast is graphically represented in the CD’s booklet with the help of brackets.

intelligible and recurrent from chorus to chorus. However, the text's intelligibility and recurrence, as well as the voice's quite 'standard' environment, highly contrast (synchronically) with the second stream. As previously mentioned, lyrics sung by the second vocal stream are barely intelligible. This unintelligibility is mostly caused by the stream's lower sound level, but over all by the presence of a heavy stereo flanging effect.³⁶⁰ Indeed, the voice seems to move around the main vocal stream, almost sounding like a musical instrument. The flanged and moving voice could be interpreted as a continuous inner speech, as a series of perceptible, yet unclear (because unintelligible), streams of consciousness. In fact, one could describe the passage from verse to chorus as the 'backgrounding' of the verse's inner 'streams of consciousness', on top of which the singer expresses her general emotional state (main vocal stream) in relation to the events evoked through these inner thoughts. Moreover, and on the basis of what has been suggested in 5.2.1, these rambling inner thoughts and flashbacks heard in choruses could also probably be interpreted as indices of inner turmoil, preoccupations, or manifestations of an unstable emotional state.

As one can see, even though the actual lyrical narrative is unclear and open to many possible interpretations, the presence of vocal staging effects quite certainly orientates the listener's perception and corresponding interpretations. If pushed, I would even argue that the literal meaning of the lyrics is not that important, especially in the case of choruses' flanged streams. Morissette's voice, her 'grain', is already by itself conveying a series of emotional 'messages'. In that context, vocal staging gives the impression of some uninterrupted strain of

³⁶⁰ In the CD's booklet, this synchronic contrast is this time graphically represented by having the contrasting streams' lyrics coloured in green. As a matter of fact, a whole study could be devoted to correspondences of settings from one form of expression to another: for example, dotted balloons in comic strips for representing inner thoughts; or different visual effects used in cinema such as slow-motion, blurring, negative, etc.

thoughts, made of a number of flashbacks from different previous conversations and inner reflections that had presumably taken place in different locations, different times, involving different (real or hypothetical) individuals.

5.4.2.2.4. Ending

The ending of the song is characterised by a kind of sustain effect, partly produced through an extremely long reverberation (more than ten seconds) added to the main stream's vocal line. The suspension is further supported by the stopping of sound sources responsible for the establishment of rhythm (drums and percussions), except for the tambourine which still executes its pattern as if located in a very large acoustic space (environment). Other instruments, such as guitars and bass, simply sustain their last chord or note until it fades out 'naturally'. Finally, the highly reverberated tambourine stops suddenly. To have this very long reverberation and suspension effect at the end is interesting in more than one way. First, the fact of having a long reverberation, suggesting among other things a quite long distance, is in strong contrast to the last word of the song, 'close-up' (03:55-03:58). The listener might feel we are somehow getting out of the inner world built throughout the song, a feeling induced by the extreme extension of this last (contradictory) syllable. It reminds me of the still effects used in cinema or video which produces a similar effect of suspended animation, apparently in order to extract the viewer from the narrative's temporality, perhaps also suggesting that even though the song ends here, the story could somehow continue.³⁶¹ It might also evoke a subjective representation of how we feel when we are taken out from a strain of thoughts,

³⁶¹ Marcel Martin (1985: 249-250) writes that 'Quant à *l'arrêt sur image* [...], il est devenu d'un usage assez courant, en particulier à la fin des films pour signifier justement l'arrêt du déroulement du récit'. Martin then gives the example of a specific film ending: 'au moment où les deux amis se retrouvent après cinq ans de séparation, un bref et presque imperceptible arrêt sur l'image semble vouloir éterniser cet instant de bonheur' (p. 250).

such a strain seeming to still ‘resonate’ for some time in our mind. Of course, all interpretations provided here are necessarily *potential*; reciprocally, a significantly higher number of additional and alternative interpretations could be collected from a group of listeners.

5.4.2.3. Intramusical Observations

The presence of vocal settings within ‘Front Row’ also has some impact on the intramusical level. We have already mentioned the structural correspondence between the settings and the song’s formal sections. We have also previously discussed the quasi-instrumental role of the stereo flanging effect heard during the choruses. Indeed, the quite artificial sound quality of the highly processed vocal stream is close to the one of a synthesizer. From a listener’s standpoint, this now ‘alien’ sound can indeed be perceived as a ‘new’ instrument characterised by a given timbre and spatial behaviour, for ‘Extensively modifying an existing sound source, to the point where the characteristic qualities of the original sound are lost, is actually the *creation of a sound source*’ (Moylan 1992: 46). After a closer listening, however, one will probably perceive the human nature of the sound in question—especially in the third verse (B3) where the mix balance seems to foreground a little more the processed contrasting stream (S12). Still, its unnatural quality makes it closer to an electronic instrumental sound than, say, a traditional backing vocal. I will not pass in review again all the contrasting effects from an intramusical point of view, but it is clear that they play a major role in the constitution of the overall sound texture, a texture that of course evolves in time. Furthermore, different vocal settings help segregate vocal sound sources, as it is clearly the case during choruses where both vocal streams display completely different settings. Finally, one could consider the use of vocal setting from the perspective of musical

style. It is quite clear that given settings are used as part of an artist's stylistic vocabulary (see 6.2.3.2). For example, Morissette is often heard with self-recorded harmonies such as the ones encountered in this particular song.³⁶²

5.5. Summary

This chapter provided an opportunity to discuss several examples of vocal staging found in the recorded rock music repertoire. It was also an occasion to see that vocal staging effects might act on one or more of the three main aspects of sound we have privileged for our classification (see Table 5.0-1): space, timbre and time. Of course, many more examples could have been chosen and discussed. Moreover, several vocal settings heard in the repertoire are not as 'fixed' as most of the ones that have been presented here, but are rather evolving in time, making it more difficult to analyse in the context of a written dissertation. It is hoped, however, that the discussion has demonstrated the potential evocative power of vocal staging in rock music, a potential that seems to have been (and still be) exploited by sound engineers, producers and artists for reasons that can hardly be qualified as arbitrary. Indeed, it seems quite clear that vocal staging can, along with other musical parameters, orientate the listening process, potentially giving rise to a number of extramusical significations. Moreover, vocal staging also acts on the music itself in terms of texture, frequency content, rhythm, etc. More general observations are drawn in the General Conclusion that follows. But it is already clear that vocal staging should be thought of as a

³⁶² Similarly, John Lennon's voice has increasingly been associated with the presence of a short echo—notably heard in Beatles' 'A Day in the Life' (1967) or in Lennon's 'Imagine' (1971)—to the point that his son, Julian Lennon, whose 'remarkable vocal resemblance to his father' (Dan Heilman. <http://allmusic.com/cg/x.dll?p=amg&sql=A11549>, visited 25 February 2000) has been often noticed, re-utilised the effect to his own advantage.

musical parameter in its own right, at the same level as other parameters such as harmony, melody, rhythm, texture, etc., at least in musical styles adopting an artistic-technologic aesthetic (3.0).

Most of the examples cited have been discussed in relation to the underlying lyrics. Of course, there are a large number of recordings containing ‘staged’ vocals for which it is not possible to find direct correlations between their corresponding lyrics and the connotations that have been proposed here—not to mention cases of lyrics sung in foreign or ‘invented’ languages. However, one could still argue that such connotations are *potentially* effective, somehow acting on the level of some cultural ‘intuition’. In other words, in much the same way as, for example, irony is sometimes working on the basis of a contrast between what is said and the *way* it is said, it sounds reasonable to imagine a listener (unconsciously) associating a given vocal sound with a given connotation—such as ‘inner turmoil’ in the case of flanging—even though this connotation is not made explicit in, or supported by, the lyrics. A good example of such an effect of ‘double-entendre’ is found in Peter Gabriel’s ‘I Have the Touch’ (1982) where ‘A typical, dynamic unmotivated disproportion works here between the enunciative tone the words imply by themselves, and the way they are sung’ (Fiori 1987: 39). The song’s main character is looking for some human warmth and contact in our hi-tech and individualised/privatised world. Consequently,

The tension between an ‘intimate’ and a ‘technical’ sense of the line ‘wanting contact’ operates through a very simple and effective differentiation within Gabriel’s vocal. While ‘wanting contact’ is sung by a full, doubled voice, scanning the syllables upon each note, ‘I am’ and ‘with you’ are almost whispered by a single voice, very close to the microphone:

(I am) wanting contact (with you) [01:14-01:29]

What Fiori describes here is thus an effect of contrast acting on at least two levels at the same time. First, on the level of Gabriel's performance, there is his mode of enunciation; second, on the level of vocal staging, there is an oscillation between an effect of intimacy (close-up) and an effect of hi-tech (double-tracking and filtering). There is nothing *a priori* in the lyrics themselves that 'ask for' a given vocal setting. Rather, connotations emerge from the interaction between the performance, the lyrics and the voice's settings.

General Conclusion

Si l'amplification de la voix ne semble déjà obéir qu'à un principe instrumental, la structure de beaucoup d'instruments n'apparaît-elle pas commandée et compliquée par le désir de grossir leur son ou d'en altérer le timbre originel ? Dans tous les cas il s'agit bien moins d'« imiter » que d'outrepasser quelque chose—le déjà connu, l'ordinaire, le relativement modéré, le naturel. D'où d'in vraisemblables inventions, une propension aux monstruosité acoustiques, qui déroutent les physiciens.

(Schaeffner 1968: 25)

6.1. General Summary

The general aim of this dissertation was twofold. First, to illustrate the wide range of potential expressive power held by vocal staging. Second, to try and identify the origins of the practice. Results relating to the latter objective were mostly presented in the first three chapters. Chapter 1 showed not only that vocal staging practices date back to ancient times but also that such practices were widespread. Such 'universality' is not that surprising considering that using the voice as a means of communication is itself a feature common to all humans, and consequently, any practice that could help enhance or refine the communication process is liable to be exploited. What might be considered as more surprising, however, is the *importance* the practice seems to have had in the course of human history. In chapter 2, we explored pioneering uses of electrical vocal staging in a number of

forms of expression using the recorded, or amplified voice as sound source. This survey excluded recorded popular music, whose earlier uses of the practice were reported in chapter 3. We have thus seen that the advent of electricity, mostly through recording techniques, has provided a wide range of possible ways of manipulating the sound of the voice, a range that is likely to continue expanding along with technological developments. A closer historical examination also showed that a number of conventional applications of vocal staging started to emerge in cinema, radio, recorded popular music, and even theatre.

The main objective of the thesis, however, was to provide the widest possible survey of the expressive reach of vocal staging. As mentioned in the General Introduction (0.1.3.1.1), due to the great number of disciplines convoked in chapters 1 and 2, most of the information presented and discussed had to be derived from secondary sources. Conversely, observations and results presented in the three remaining chapters were mainly based on data from primary sources, either in the form of results from empirical experimentation (chapter 4), or through direct analysis of examples from the repertoire of recorded popular music (chapters 3 and 5). Since my interests and formation are mostly musicological, it seemed advisable to rely on other researchers' results or models when other forms of expression than music were being discussed.

These methodological observations lead to a more general epistemological issue, especially in this age of over-specialisation when, in order to explain a single, extremely common phenomenon within the everyday practices of mass mediation, it is necessary to synthesise or, at the very least, to draw on parallel knowledge from all disciplines relevant to that one phenomenon (see Tagg 1979: 67-68). Of course, there are problems with such an approach, the most important probably being that of over-simplification. However, it is

impossible to avoid the issue if our aim is to make sense of contemporary mass culture. Indeed, it is necessary, as I hope this dissertation demonstrates, to try and break down the barriers of institutionalised disciplinarity which prevent us from understanding the mechanisms and effects of such widespread and significant everyday phenomena as vocal staging. In this regard, I have provided a few pointers to possible future paths of research (see 6.3).

6.2. General Observations

6.2.1. *All Too Human*

According to Richard Middleton (1993: 178):

Human nature is always already encultured [...]. But this need not rule out the proposition that culturally specific gestures are rooted in human biology—and hence, widening out, in the greater bio (and meta-bio) sphere. Sustenance from what is concretely given, mediation by the variables of the cultural environment: these are the complementary sides of a properly materialist theory.

Taken from that perspective, it is quite startling how the practice of vocal staging seems to be deeply anchored in our biology, how connotations attached to vocal settings indeed seem to get their ‘Sustenance from what is concretely given’ to them. In fact, virtually all observations made in this dissertation can be rooted in some guise or other to psychoacoustic phenomena, even the most distant and contextually dependent connotation.

One of the most striking examples is reverberation. As biological beings, we wander in a spatial world. Long before we even thought about building our own closed environments, we were struck by reflections occurring inside natural sites such as caves. Since the dawn of

humanity, the phenomenon of reverberation (along with others, such as echo) has been invariably related to the notion of space. What becomes even more interesting is that even in its most refined applications, reverberation always stands for some audio metaphor of space. In rituals, God's omnipresence is metaphorically represented by the acoustic diffuseness of the cathedral's reverberation (1.1.3.1.1). Hitchcock's 'Marion' sequence provides another artful illustration of such a metaphoric application of reverberation: we hear the voices coming *from* Marion's head while she imagines a conversation occurring *at another location* (2.3.1.2.2.2). In most of rock music, besides enlarging the performer's sonic image, it seems that the virtual environment created by reverberation acts also as a kind of theatrical *rampe*, a fence delimiting the territory: listeners on one side, the artist on the other. When this limit is overstepped, when the absence of reverberation makes the two territories merge together, there is a feeling of invasion, of intrusion, or of extreme intimacy (5.1.3.2).³⁶³

In the same vein, other vocal settings that could *a priori* seem distant from our biological nature can still be related to it. Flanging, to which we have already devoted some space in that respect provides one example (5.2.1.4), saturation another. In the latter instance you only need to consider how all those additional 'noisy' harmonics link up with the corresponding feeling of aggressiveness that both the examples analysed (5.2.2) and the reception test results (4.3.3) have unequivocally illustrated. Ivan Fónagy (1970: 119-125), who studied how aggressiveness and anger were expressed by means of human vocal sounds, brings in an additional element. He notably found that 'anger expresses itself on the level of

³⁶³ For a study of cultural codes apparently governing human behaviour regarding inter-individual distance, see Hall 1969, 1974.

the glottis through a spasmodic contraction of the internal laryngeal muscles [...]’ (p. 119).³⁶⁴ It is this contraction that gives rise to the harsh vocal sound, typical of anger and aggressiveness, and which displays similar ‘noisy’ harmonics, just as a ‘Big Muff’ would produce (see 5.2.2). This internal tension can be thought as an internal ‘strangulation’, and, still according to Fónagy, this reflex of internal ‘strangulation’ would constitute a vestige of ancestral traumas from ancient battles and fights: voice saturation, then, would metaphorically prefigure homicide (p. 120).³⁶⁵ In other words, vocal staging could simply be considered as a metaphorical extension of natural phenomena, including our (often problematic) psychological state.

6.2.2. Extramusical Significations (Connotations)

Several connotations have been presented in this dissertation, either found in recorded rock music or in other forms of vocal expression. We saw that there can be many possible connotations for a given vocal setting. For example, in section 3.1.1.2.2 we described two extramusical significations that could be related to vocal staging in Patti Page’s ‘Confess’ (1948): ‘religion’ and ‘inner thoughts’. Similarly, the contrasting flat voice in Björk’s ‘Hunter’ (1997), as analysed in section 5.1.3.2.3, gave rise to at least four types of significations: an effect of spatial close-up; an effect of aside; a possible ‘opening’ from the part of the character; potential danger. Another example, presented in section 5.2.1.3, suggested that phasing in Pulp’s ‘I Spy’ (1995) might evoke both the character’s psychological instability and his omnipresence (access to his victims’ mind). I would like to

³⁶⁴ ‘[...] la colère se manifeste au niveau glottique dans une contraction spasmodique des muscles laryngés internes [...]’.

³⁶⁵ Fónagy (1970: 120, note 1) even refers to cases of bronchial asthma that were apparently reflecting suicidal tendencies.

recall a final example, this time found in cinema, namely the ‘Marion’ sequence from Hitchcock’s *Psycho* (1960) (see 2.3.1.2.2.2). Here again we can identify at least two kinds of significations related to the same setting.³⁶⁶ First, and because of our daily experience, we may simply think of reverberation as a representation of a given space or environment. However, in the context in which it is presented, additional significations arise: reverberation indicates that voices heard by Marion reverberate elsewhere (in Marion’s head and/or in the place imagined by Marion where the conversation should take place). Moreover, it is *because* they sound ‘elsewhere’ that we ‘understand’ that the heard conversation is *imagined* by Marion. Of course, all these connotations are related to each song’s or film’s context—song lyrics; singers’ performance; scenario; image; etc.

What is striking when looking at these different connotations is not so much their apparent diversity as the fact that this diversity seems to be somehow ‘stratified’. For example, in the case of Björk’s ‘Hunter’, connotations associated with the vocal staging effect could be ‘classified’ according to their increasing level of *abstraction*. I would argue that these different levels are related to the degree of contextual information needed in order to ‘produce’ the corresponding connotation. Accordingly, much less contextual information is needed to ‘understand’ the effect of ‘close distance’ produced by the voice’s ‘flatness’ than to register the (possible) impression of ‘danger’ which is both dependent on the lyrics and the singer’s performance—not to mention the overall mood created by the music and the listener’s own relation to the recording.³⁶⁷ In other circumstances (such as in Gabriel’s ‘Blood of Eden’ (1992) encountered in 5.1.3.2.1) a similar vocal setting, while still ‘understood’ as

³⁶⁶ Of course, in the case of films, we cannot talk about extra-*musical* significations.

³⁶⁷ I am of course here discussing extramusical significations that *I* have identified. The more ‘abstract’ the connotations, the more different they will be from listener to listener.

being close on a psychoacoustic level, will also evoke the intimacy of love on a more abstract level.

According to this criterion of level of abstraction, it might be possible to provide some general categorisation of the significations associated with some particular vocal staging effects. For this purpose, let us take the example of reverberation. It seems reasonable to argue that listeners will associate the staging effect with some conception of space, regardless of the context in which it is heard. This is of course due to the fact that we associate particular rooms and locations with their sound characteristics. Accordingly, we could consider spatial connotations as being more ‘concrete’ than other connotations. For example, in a given context, reverberation might mean ‘inner thoughts’, or ‘past event’, or ‘dream’, etc., all of which could be considered as more ‘abstract’ than a ‘concert hall’ or a ‘men’s room’ (see 3.1.1.2.2).

6.2.3. *Intramusical Relations*

6.2.3.1. Vocal Staging and Sound Layers

While the main aim of this study was to study the possible connotations evoked by vocal staging, some attention has also been given to the intramusical relations between vocal staging effects and other musical parameters. What seems to come out from our observations is that these relations might occur between many musical elements at the same time. A possible way to look at this phenomenon is to use Allan Moore’s (1993: 31) stratified sound model, which ‘suggests that the instruments and voices of rock are stratified into relatively discrete layers’. Accordingly:

The model stratifies sound-sources into four layers. The first is an explicit rhythmic layer [...]. The second layer is formed by the music's deepest notes (those with lowest frequency) [...]. A third layer is formed from higher frequency melodies [...]. The fourth layer fills the registrar gap between the second and third by supplying harmonies congruent to each of these [...] (p. 31).

In other words, we find a *melodic layer*, a *harmonic layer*, a *low-frequency layer* and a *rhythmical layer*.

To study internal relations using this perspective can be quite revealing. For example, we have already evoked the impact that (especially) long echo might have on rhythm (5.3.1.2). It seems clear, however, that long echo acts on at least two other layers. On the melodic layer, echo 'alters' the melodic line by adding elements that are not included in the 'original' melodic line. From a perceptual standpoint, it could be argued that the overall melody should be considered as the combination of the original line and the additional elements provided by the echo effect. However, and because of the autosonic nature of echo and effects of overlapping, these echo-related additional melodic elements are perceptible as such: listeners are able to conceptually separate both items, otherwise it would not be so common to hear them reproduce the melodic line, and little or nothing else, when singing along with a recording. It is true sometimes, however, that people 'reproduce' the echo effect, mostly for humorous reasons. Allan Moore (1993: 115) provides an example of such a humorous use of echo in punk music.

The Rezillos' 'Glad All Over' [(1978) is] a vicious remake of the Dave Clark Five hit of 1964, taken at great speed [...] The original includes the line 'I-I will say' [...]. The syllable 'I' is attacked a second time, and the syllable 'say' is allowed to echo in parallel [in triplets, with the help of electronic-autosonic echo]. The Rezillos re-attack [allosonically] the 'ay',³⁶⁸ increasing slightly in volume, thereby pointing up the mannered production of the original (who said punk was incapable of subtlety?).

Long echo might have a similar influence on the harmonic layer, often giving rise to 'contrapuntal' effects. While it is possible to imagine such an effect applied to the voice, 'harmonic' echo is more frequently heard when affecting other sound sources, and especially guitar. Craig Anderton (1985: 39-40) describes how very long echoes can be used to create what he calls 'Frippertronic echo effects':

This style of playing, popularized by British guitarist Robert Fripp, requires very long echo times [3 to 4 seconds]. Before the advent of long delay lines, composers used two tape recorders to create extremely long echoes by recording a signal at the record head of one recorder, then threading the tape through a second recorder and picking up the signal from the second recorder's playback head [...].³⁶⁹ Nowadays, it is far more convenient to use long digital delays in place of dual tape recorders. [...] For best results, play either long sustaining notes or clusters of repetitive notes. Example: Play the tonic of a chord and let that repeat; play the third and let that repeat; then play the fifth and let that repeat. All three notes will now be echoing and feeding back to create a chord. At this point, either continue playing over the repeating chord to create an even thicker texture, or store the chord by using the infinite repeat feature [...] and play a lead on top of the repeating chord sound.³⁷⁰

³⁶⁸ 'Allosonically' means 'through a re-performance'. See 5.3.0.2, especially note 321, for additional information.

³⁶⁹ This would constitute another example of Olivier Julien's (1999) concept of 'diverting of musical technology'.

³⁷⁰ This leads to the question of the extension of the concept of staging to other sound sources than voice, which is discussed in section 6.3.2 below.

An impact that some other sound staging effects might have on the intramusical level can also be related to Moore's harmonic layer, namely the impact on the overall sound texture. This impact can be better viewed in terms of interactions between (evolving) timbres. For example, when discussing Nine Inch Nails' 'Heresy' (1994) in section 5.2.2, I did not mention the fact that Reznor's saturated voice was accompanied by equally saturated (bilateral) guitars. The interaction between these two similar sounds has a direct impact on the overall sound texture, conferring it an internal additional coherence. The same can be said for effects such as stereo flanging, which, besides enlarging the voice's spatial image, confers on the voice a kind of synthetic-instrumental sound (see 5.4.2.2.3). This particular quality makes the vocal sound blend better with other sounds. Of course, such internal relations are often intimately related to the aesthetic of a given style, which leads me to the next consideration.

6.2.3.2. Vocal Staging and Style

On at least two occasions (5.0.2.2; 5.3.1.2), we have discussed the relations which vocal staging might maintain with a given style. Indeed, following Philip Tagg's (1994) discussion of rave music, we have pointed to the apparently systematic use of echo effects on vocals in many 'modern dance' and techno styles. Similarly, we have noticed the widespread use of short echo effects in early rock'n'roll (3.1.1.2.3). Other examples of a correspondence between a given style's aesthetic and a coherent use of vocal staging were the relative 'flat' voice heard in folk-revival recordings (5.1.1.2.1.2) and the unvarying environment used throughout 'standard' rock recordings (5.1.1.2.1.4). It seems clear that in addition to the possible connotations conveyed by vocal staging effects, their presence often seems to reflect a given stylistic or aesthetic trend. The same can be said, of course, for all other musical

parameters. For example, Garry Tamlyn (1995; 1999) clearly demonstrates that drum patterns and drummers' performance in early rock'n'roll constitute an essential ingredient of the overall style's sound, drawing the conclusion that the role of drums should be more often considered in discussions about popular music. One could also decide to study the *staging* of drums in relation to different styles and periods of rock. In other words, it is a *stylistic analysis* approach that is called for, an approach that should include *all* parameters of music, including of course vocal staging, for 'listeners cognize distinctions between styles through recognizing differences in the articulation of musical sounds, even though most listeners may be unable to explain those differences of articulation' (Moore 1993: 4).³⁷¹ To consider vocal (or any other sound source's) staging from the perspective of stylistic analysis would therefore certainly help understand the intricate set of relationships maintained by a given style and its audience, a relationship that evolves through time, therefore giving rise to additional series of connotations, because of the new contexts created.

6.3. Further Research

6.3.1. Toward a Semiotic Model

As stated earlier (0.3.2), it was not our intention to locate this study within the frame of a given semiotic model. This dissertation mainly concentrates on one particular aspect of meaning: extramusical significations. Accordingly, I believe that if I had chosen, criticised and adapted such a theoretical model, it would have made our discussion cumbersome without necessarily enlightening it. However, the task of developing a semiotic model that

³⁷¹ In this regard, it would be inappropriate to disregard earlier studies. A good starting point might be to attempt an extension and adaptation of approaches such as LaRue's (1992).

would account for the general process of semiosis of which vocal staging is an integral part (along with all other musical parameters and contextual elements) could be interesting. In that regard, the model developed by Charles Peirce and his followers would probably be the most relevant one, especially considering the fact that the model was conceived with the purpose of accounting for *any* type of signs.

For example, Peirce's notions of 'icon' and 'index' are certainly applicable to audio recordings, and can even probably help understand better the way the whole process works. Indeed, when considering a given recorded vocal stream, it can be seen as maintaining an iconic relation to the performer's actual voice, for 'a sign is *iconic* to the extent to which it itself has the properties of its denotata' (Charles Morris cited in Nöth 1990: 123). On the other hand, if the object we want to consider is the performer taken as a person, then the relation between the recorded voice and that person would be indexical:

A sign vehicle is an index if it is 'really affected' [...] by its referential object. 'The index is physically connected with its object; they make an organic pair, but the interpreting mind has nothing to do with this connection, except remarking it, after it is established' (Nöth 1990: 113; Nöth is citing Peirce).

Accordingly, reverberation heard in a recording could be considered as an icon of 'reverberation' as we know it in our daily life. But it would maintain an indexical relation to other (real or imaginary) objects, such as cathedrals, or God. It could even be thought of as a symbol in some instances found in cinema, as in the case of our 'Marion' sequence, because it has become entrenched in a much larger complex of codes. However, to reduce Peirce's

semiotic model to the icon/index/symbol trilogy would be misleading; hence the need for thorough reflection that goes far beyond the scope of this research.³⁷²

6.3.2. Extension of the Notion of Staging

Another aspect of our study that could be further developed is the extension of the notion of ‘staging’ to other sound sources or ensembles of sound sources. Moreover, and as already mentioned, this extension could occur in a discussion about style: style of a particular producer, or artist, or period, etc. Indeed, I believe that no general discussion about style in popular music can reasonably disregard the notion of staging. On the contrary, audio recording staging has become one of the essential features of all popular music aesthetics, and the dominant factor in a large number of them. Not to consider this aspect would invariably lead to incomplete, even misleading, conclusions. For example, I am convinced that audio recording staging plays a predominant part in listeners’ interaction with their music. If pushed, I would relate each style’s staging trend with aspects of the corresponding subculture. For example, it would be quite easy to draw parallels between staging trends and the audience’s dancing trends, clothing trends, etc. Of course, such analyses should also take other musical parameters into account. Such stylistic analyses could then participate in the understanding of cultural identification processes, which constitutes the fundamental question underlying most of sociological and cultural studies research. From this perspective, the

³⁷² Indeed, Peirce’s semiotics is intricately linked with his philosophy. For example, there is no ‘fixed’ notion in Peirce’s model. Rather, everything is expressed in terms of *relations*, mostly within the frame of triadic elements: Firstness/Secondness/Thirdness; Icon/Index/Symbol; Representamen/Object/Interpretant; etc. There are of course many writings about Peirce’s semiotics, and since his own thoughts about it are rather scattered, I would rather refer the reader to Deledalle 1979; Everaert-Desmedt 1990; Turino 1999; to mention just a few. As for application of Peirce’s semiotics to music, while there are many of them dealing with general aspects of music, I have found none addressing specifically the problem of *recorded* music. All this could of course lead to very interesting research.

notion that musicology is of little or no use in understanding the culture, ideas and values of any population at any time, seems quite absurd (see also Tagg 1991: 144).

6.3.3. Reception Tests

The last aspect I would like to briefly consider is the need for more reception tests. Indeed, even though the test presented in this dissertation was quite modest, it still has helped to support and confirm some of our analytical observations. Another way to incorporate a reception test would have been to design the test *after* the analyses were done in order to verify the analyst's observations. This project, though, would have needed a completely different design, which of course could become part of further research. Actually, what would be needed first is a thorough epistemological reflection about methodological aspects of reception tests as applied to popular music studies, and (especially) the results' *interaction* with other observations (analytical; historical; cultural; etc.). In that respect, Philip Tagg and Bob Clarida (2000) can be considered as pioneers.

6.4. Le mot de la fin

The main problem we are facing when attempting to 'measure' the effects of music on listeners is the inevitable resulting *imprecision* of our observations. Accordingly, this fuzziness will stop many researchers from undertaking so a thankless task. What is the point in conducting research that will inevitably lead to incomplete results? The most adequate answer to this question is provided by Abraham Moles who wrote in his *Sciences de l'imprécis* (1995: 24-25) as follows:

En bref, nous restons près des anciens âges, et nous regrettons toujours le beau rêve d'une magie opérationnelle des recettes qui réussissent toujours, alors que, ce qui nous est proposé, ce sont les recettes qui, dans les limites de l'hypothèse et de la précision, réussiront avec un haut degré de probabilité. [Ainsi,] les ouvriers de la vérité, qui, maîtres d'eux-mêmes et de leur pensée dans *leur* domaine propre, retombent, dans le reste de leur vie, à l'état moins glorieux d'êtres à la raison vacillante et aux affirmations péremptoires, car *il est tellement plus commode de vivre dans des certitudes fausses que dans des incertitudes mesurées.*³⁷³

³⁷³ Italics are mine in the last sentence only. I would propose the following translation: 'To sum up, we remain close to ancient ages, and we always regret the nice dream of the operational magic of ever-successful recipes, when in fact, what is presented to us are recipes which, within the limits of hypothesis and precision, will only succeed with a high degree of probability. [Thus], workmen of truth, who, as masters of their own self and of their own thoughts within their *own* domain, fall again, for the rest of their lives, to the less glorious state of beings with failing reason and peremptory affirmations, for it is much more convenient to live with wrong certainties than with measured uncertainties'.

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³⁷⁴ Abbreviations in brackets at the end of each entry refer to the type of document: Audio Recording (R); Film (F); Printed Music (M).

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Appendices

99 OUT OF A HUNDRED WANNA BE LOVED



Lyrics by
AL LEWIS
Melody by
AL SHERMAN

Originally Introduced
by
RUDY VALLÉE
and HIS CONNECTICUT YANKEES
on the Fleischmann Hour

MADE IN U.S.A.

ROBBINS MUSIC CORPORATION
799 Seventh Avenue, New York

Appendix 2: Reception Test Sample Form

INSTRUCTIONS

Le but de cette recherche est de cerner les significations que peuvent avoir certains sons pour les auditeurs. Pour y parvenir, on vous demande de porter un jugement sur des sons que vous entendrez en vous servant d'une échelle formée de paires d'adjectifs. En faisant ce test, nous vous demandons de porter les jugements en fonction de ce que ces sons représentent pour *vous*.

Sur chacune des pages de cette brochure, vous trouverez inscrit dans le haut le numéro de l'exemple sonore à juger, suivi d'une série d'adjectifs groupés par paires. On vous demande d'évaluer chaque exemple sonore en cochant chaque échelle dans l'ordre. La direction vers laquelle vous orientez votre choix dépend de l'adjectif que vous jugez le plus caractéristique du son que vous entendez. Par exemple, si le son que vous entendez vous semble **très « irréal »**, vous cocherez ainsi:

Réel

3	2	1	0	1	2	X
---	---	---	---	---	---	---

 Irréal

Par contre, si le son entendu vous semble **un peu « en mouvement »** plutôt qu'immobile, vous choisirez:

En mouvement

3	2	X	0	1	2	3
---	---	---	---	---	---	---

 Immobile

De la même façon, si un exemple sonore vous semble **plutôt « triste »**, vous choisirez:

Triste

3	X	1	0	1	2	3
---	---	---	---	---	---	---

 Joyeux

Les chiffres ombragés ne sont donc là que pour vous aider à donner un ordre de grandeur à votre jugement. Dans la plupart des cas, le chiffre 3 signifie « beaucoup » ou « très », le chiffre 2 signifie « plutôt » ou « moyennement », le chiffre 1 signifie « un peu ». Quant au chiffre 0, vous le cochez lorsque vous avez le sentiment que la paire d'adjectifs ne s'applique pas à l'exemple sonore entendu ou lorsque vous considérez le son entendu comme étant neutre par rapport à la paire d'adjectifs. Par exemple, si un son ne vous inspire ni culpabilité ni innocence, vous inscrirez:

Coupable

3	2	1	X	1	2	3
---	---	---	---	---	---	---

 Innocent

Important

- Il est important de faire un jugement pour toutes les paires d'adjectifs.
- Ne cochez qu'une case par paire d'adjectifs.
- Cochez bien au milieu de la case, et non sur les limites, de préférence en utilisant un X.
- Ne retournez pas voir ce que vous avez inscrit pour les exemples précédents.
- C'est votre première impression que nous voulons. Ne passez donc pas trop de temps sur chacune des paires d'adjectifs.

Déroulement

1. Lorsque vous aurez terminé de lire toutes les instructions, remplissez la section suivante (Identification).
2. Au début du test, on vous fera entendre l'enregistrement d'un texte lu par une voix non modifiée. Il s'agit simplement d'une référence.
3. Lorsqu'on vous l'indiquera, vous entendrez le même texte, lu par la même personne, mais dont la voix aura été modifiée d'une façon ou d'une autre. **C'est sur ce changement dans le son de la voix que nous vous demandons de porter votre jugement, pas sur le texte.**
4. Chaque exemple sonore aura une durée d'environ 2:30 minutes. Nous vous conseillons d'écouter l'exemple sonore pendant au moins 10 secondes avant de commencer à porter vos jugements. Ensuite, vous pourrez porter vos jugements au fur et à mesure que vous entendrez le reste de l'exemple sonore. Encore une fois, on vous demande de porter votre attention sur le changement dans le son de la voix.
5. Au bas de chaque page, vous trouverez un espace où vous pouvez ajouter des mots auxquels vous associez le son entendu. Ceci est facultatif. Nous vous demandons d'en écrire si vous en avez le temps, une fois que toutes les échelles pour l'exemple courant auront été cochées.

Merci de votre participation!

(N.B. La forme masculine est utilisée dans le seul but d'alléger le texte).

IDENTIFICATION

Ce test est anonyme. Nous aimerions cependant avoir certaines informations de façon à préciser les résultats obtenus. S'il vous plaît, faites un « X » dans la ou les cases appropriées et remplissez les espaces prévus à cette fin.

1. Sexe Féminin Masculin
2. Âge 18 et moins Entre 18 et 25 Entre 26 et 45 46 et plus
3. Vos styles de musique préférés:
 Pop/Rock Dance (incluant le Rave) Classique Jazz Country
 Autres: _____
4. Nommez quelques-uns de vos artistes ou compositeurs préférés:

5. Vous écoutez la musique:
 à la radio à la télévision (ex.: Musique plus) baladeur chaîne stéréo
6. Si vous écoutez de la musique à la radio, vos stations préférées sont:
 CKRL Radio-Canada F.M. CHOI CHIK Rock Détente
 Autres: _____

7. Le programme d'études auquel vous êtes inscrit:

8. Vous vous considérez:
 Musicien Un peu musicien Non musicien

EXEMPLE SONORE No 1

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14.	Intérieur	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Extérieur
3	2	1	0	1	2	3				
15.	Doux	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Agressif
3	2	1	0	1	2	3				
16.	Supérieur	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Inférieur
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17.	Courageux	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Peureux
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18.	Tendu	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Détendu
3	2	1	0	1	2	3				
19.	Désespéré	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Confiant
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20.	Humain	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Inhumain
3	2	1	0	1	2	3				
21.	Malveillant	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Bienveillant
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22.	Beau	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Laid
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23.	Autoritaire	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Soumis
3	2	1	0	1	2	3				
24.	Ancien	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Nouveau
3	2	1	0	1	2	3				
25.	Angélique	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td> </tr> </table>	3	2	1	0	1	2	3	Démoniaque
3	2	1	0	1	2	3				

Autres mots (noms, adjectifs, verbes) auxquels vous associez la sonorité entendue dans l'exemple courant (facultatif):
