

A GUIDE TO THE PERFORMANCE AND STUDY OF *DIALOGUE DE L'OMBRE DOUBLE* (1985)

BY PIERRE BOULEZ (1925-1916)

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Pierre Boulez (1925-2016) composed *Dialogue de l'ombre double* for clarinet and live electronics in 1985. This same year, Alain Damiens of Ensemble InterContemporain premiered and recorded the work with the help of Andrew Gerzso of Institut de Recherche et de Coordination Acoustique/Musique (IRCAM). The piece alternates between pre-recorded and live sections that are performed with varied levels of amplification and reverberation creating a dialogue between the parts. Boulez also includes detailed instructions for the spatialization of the pre-recorded tracks that play through six equidistant speakers that surround the audience. Furthering the complexity of this work, it is available in two published versions: *version aux chiffres arabes* (Arabic numeral version) and *version aux chiffres romains* (Roman numeral version). Each version includes much of the same musical material, but arranged in a different order. Performance of *Dialogue de l'ombre double* requires extraordinary technical facility and musical understanding from the clarinetist, the dedicated involvement of a highly qualified sound technician, and the use of a spacious, technologically equipped performance venue. This performance guide aims to facilitate greater accessibility and understanding of this challenging work, in order to encourage widespread performance of this extraordinary piece.

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TABLE OF CONTENTS

| | Page |
|--|------|
| LIST OF FIGURES..... | v |
| LIST OF MUSICAL EXAMPLES..... | vi |
| CHAPTER 1. INTRODUCTION..... | 1 |
| 1.1 Brief Biography of Pierre Boulez..... | 1 |
| 1.2 Significant Pieces and People..... | 6 |
| 1.2.1 <i>Domaines</i> | 7 |
| 1.2.2 <i>Répons</i> | 9 |
| 1.2.3 <i>...explosante-fixe...</i> | 10 |
| 1.2.4 Andrew Gerzso..... | 12 |
| CHAPTER 2. <i>DIALOGUE DE L'OMBRE DOUBLE</i> | 14 |
| 2.1 History of the Work..... | 14 |
| 2.2 Performance Practice and Technological Demands..... | 18 |
| 2.2.1 Reverberation and Recording..... | 20 |
| 2.2.2 Spatialization..... | 25 |
| 2.2.3 Lighting and Additional Accommodations..... | 29 |
| CHAPTER 3. STRUCTURAL COMPARISON AND ANALYSIS..... | 31 |
| 3.1 Large Scale Structure..... | 31 |
| 3.2 <i>Sigle Initial</i> | 32 |
| 3.3 Strophes and Transitions..... | 36 |
| 3.4 <i>Sigle Final</i> | 48 |
| 3.5 Salient Features of the Work..... | 50 |
| CHAPTER 4. PRACTICAL ADVICE FOR STUDY AND PERFORMANCE..... | 55 |
| APPENDIX A. EDITED EQUIPMENT LIST..... | 58 |
| APPENDIX B. ANNOTATED BIBLIOGRAPHY..... | 61 |
| BIBLIOGRAPHY..... | 64 |

| | |
|-----------------|----|
| Scores | 67 |
| Recordings..... | 67 |

LIST OF FIGURES

| | Page |
|--|------|
| Figure 2.1: Speakers with Clarinetist Centered from Technical Instructions. | 20 |
| Figure 2.2: Speakers with Clarinetist on Stage from Technical Instructions. | 20 |
| Figure 2.3: Piano Reverb from Technical Instructions. | 21 |
| Figure 2.4: Recording Instructions for <i>Transition de 3 à 4</i> from Technical Instructions. | 24 |
| Figure 2.5: Automation Process from Technical Instructions. | 26 |
| Figure 2.6: Technical Instructions for Spatialization of <i>Sigle initial</i> (manual). | 28 |
| Figure 2.7: Technical Instructions for Spatialization of <i>Sigle initial</i> (automated). | 28 |
| Figure 3.1: Structural Comparison of <i>version aux chiffres romains</i> and <i>version aux chiffres arabes</i> | 32 |
| Figure 3.2: Illustration of Spatialization for <i>Sigle Initial</i> (Andrew Gerzo, Ircam Centre-Pompidou). | 33 |
| Figure 3.3: Zig-Zag Pattern (<i>Transition de IV à V</i>). | 44 |

LIST OF MUSICAL EXAMPLES

| | Page |
|--|------|
| Example 1.1: <i>Domaines</i> by Pierre Boulez, Cahier A..... | 8 |
| Example 1.2: <i>Dialogue de l'ombre double</i> by Pierre Boulez, Strophe I..... | 8 |
| Example 3.1: <i>Dialogue de l'ombre double (version aux chiffres romains)</i> , transition to <i>Strophe I</i> (mm. 57-58). | 35 |
| Example 3.2: <i>Dialogue de l'ombre double (version aux chiffres arabes)</i> , transition to <i>Strophe 1</i> (mm. 57-60) | 35 |
| Example 3.3: <i>Dialogue de l'ombre double (version aux chiffres romains)</i> , <i>Transition de I à II</i> (mm. 1-2). | 36 |
| Example 3.4: <i>Dialogue de l'ombre double (version aux chiffres arabes)</i> , <i>Transition de 2 à 3</i> (mm. 1-4). | 37 |
| Example 3.5: <i>Dialogue de l'ombre double</i> , <i>Transition de I à II</i> (mm. 4-5). | 38 |
| Example 3.6: <i>Dialogue de l'ombre double</i> , <i>Transition de II à III</i> (mm. 6-7). | 39 |
| Example 3.7: <i>Dialogue de l'ombre double</i> , <i>Strophe 1</i> (m. 14). | 40 |
| Example 3.8: <i>Dialogue de l'ombre double (version aux chiffres romains)</i> , <i>Transition de III à IV</i> (mm. 5-8). | 41 |
| Example 3.9: <i>Dialogue de l'ombre double (version aux chiffres arabes)</i> , <i>Transition de 1 à 2</i> (mm. 5-8). | 41 |
| Example 3.10: <i>Dialogue de l'ombre double (version aux chiffres romains)</i> , <i>Transition de III à IV</i> (mm. 34-38). | 42 |
| Example 3.11: <i>Dialogue de l'ombre double (version aux chiffres arabes)</i> , <i>Transition de 1 à 2</i> (mm. 35-38). | 42 |
| Example 3.12: <i>Dialogue de l'ombre double</i> , <i>Strophe V</i> (mm. 43-45). | 45 |
| Example 3.13: <i>Dialogue de l'ombre double</i> , <i>Transition de V à VI/Transition de 3 à 4</i> (mm. 14-17). | 46 |
| Example 3.14: <i>Dialogue de l'ombre double</i> , <i>Transition de V à VI/Transition de 3 à 4</i> (mm. 6-7). | 46 |
| Example 3.15: <i>Dialogue de l'ombre double</i> , <i>Transition de V à VI/Transition de 3 à 4</i> (mm. 9-11). | 46 |

| | |
|---|----|
| Example 3.16: <i>Dialogue de l'ombre double, Transition de 5 à 6</i> (mm. 22-25). | 47 |
| Example 3.17: <i>Dialogue de l'ombre double, Sigle Final</i> (mm. 63-65). | 49 |

CHAPTER 1

INTRODUCTION

Pierre Boulez (1925-2016) was arguably one of the most influential conductors and composers of the 20th century. An authority on contemporary music, he founded many landmark musical institutions dedicated to contemporary performance, research, and study. Boulez composed *Dialogue de l'ombre double* for clarinet and live electronics in 1985 and dedicated it to Luciano Berio (1925-2003). That same year, this work was premiered and recorded by French clarinetist Alain Damiens (b. 1950) of Ensemble InterContemporain with the help of Andrew Gerzso of *Recherche et Coordination Acoustique/Musique* (IRCAM). This first chapter provides a brief biography of Pierre Boulez as well as describe several works that are closely associated with *Dialogues* including *Domaines*, *Répons*, and *...explosante fixe...* Finally, an explanation of the contributions of Andrew Gerzso at IRCAM illustrates the influences that led to the composition of *Dialogue de l'ombre double*.

1.1 Brief Biography of Pierre Boulez

Pierre Boulez was born in Montbrison/Loire on March 26th, 1925.¹ In 1942, Boulez began at the Conservatoire de Paris and three years later, he won the Premier Prix in harmony while studying with Olivier Messiaen (1908-1992). While in Paris, Boulez also studied composition with Andrée Vaurabourg (1894-1980) and later studied with René Leibowitz (1913-1972), a student of Arnold Schoenberg (1874-1951).² Following his time at the Paris

¹ "Pierre Boulez," Universal Edition, accessed July 11, 2021, <https://www.universaledition.com/pierre-boulez-88>.

² Albert Rice, *Notes for Clarinetists: A Guide to Repertoire* (New York: Oxford University Press, 2017), 26.

Conservatory, Boulez began his conducting career as the musical director of Compagnie Renaud-Barrault where he led performances of theater music. At Compagnie Renaud-Barrault, Boulez recorded Milhaud's music for Paul Claudel's *Christophe Colomb* that would continue to influence his work as a musician. Published in 1950, the first work that spread this young composer's name abroad was his Sonata no. 2 for piano that premiered in 1952. Immediately following, Boulez composed *Livre pour quatuor* for string quartet. According to Grove Music Online:

The work is in the form of a collection of movements, and it is left to the performers to select which will be given at any one performance. Thus the *Livre* anticipates those works of the late 1950s in which the performer is allowed to choose his or her own path through the music. Its immediate significance, however, was as a pointer towards the technique of 'total serialization'. Stimulated by the last works of Webern and by Messiaen's *Quatre études de rythme* (1949–50), Boulez sought to develop a technique whereby the principles of serialism could be made to govern the timbre, duration, and intensity of each sound, as well as its pitch. Some of the movements of the *Livre pour quatuor* may be considered as first sketches towards such a technique.³

In 1951, Boulez arrived at the studio of Pierre Schaeffer (1942-1990) who, with the assistance of Radiodiffusion Télévision Française, compiled the resources for creating *music concrète*. Here, Boulez composed *Deux études de musique concrète* using magnetic tape. In these two short etudes, Boulez clearly established a technique of total serialism in which he organized timbres, durations, and intensities exactly. This method would continue to influence his musical output during this time.⁴

Following his work with Schaeffer, Boulez shifted his focus to writing on musical topics

³ G. W. Hopkins, and Paul Griffiths, "Boulez, Pierre," Oxford Music Online, last modified 2001, accessed October 17, 2021, Oxford Music Online.

⁴ Oxford Music Online, "Boulez, Pierre."

informed by his perspective as a musician, conductor, and composer.⁵ Most notable was his 1952 essay titled “Schoenberg est mort,” in which he criticized the trajectory and development of modern music.⁶ In this essay, Boulez critiqued the use of twelve-tone serialism by Webern and Schoenberg, stating: “...perhaps one could demand from a composer some imagination, a certain degree of asceticism, even a little intelligence, and, finally, a sensibility that will not be toppled by the least breeze.”⁷ Although Boulez utilized aspects of serialism in much of his work, his continued call for innovation proved a constant theme through his career.

In 1954, Boulez founded a contemporary music concert series, the *Domaine Musical*, that quickly became a standard part of the musical scene in Paris and premiered many works from composers such as Messiaen (1908-1992) and Stravinsky (1882-1971).⁸ As a conductor, Boulez began to establish himself at the *Domaine Musical* where he conducted many of his own pieces and new works from other young composers. Throughout his career, Boulez continued to conduct the most prominent ensembles and orchestras of the time. For example, in 1963 Boulez conducted the Opéra national de Paris’ premiere of Alban Berg’s (1885-1935) *Wozzeck* (1914-1922). He also served as Principal Guest Conductor of the Cleveland Orchestra and Chicago Symphony⁹ as well as Principal Conductor of the BBC Symphony Orchestra and Musical Director of the New York Philharmonic.¹⁰

⁵ Oxford Music Online, “Boulez, Pierre.”

⁶ Pierre Boulez, *Notes of an Apprenticeship*, trans. Herbert Weinstock (New York: A.A. Knopf, 1968), 276.

⁷ *Ibid.*

⁸ Oxford Music Online, “Boulez, Pierre.”

⁹ “Pierre Boulez,” Deutsche Grammophon, accessed January 25, 2022, <https://www.deutschegrammophon.com/en/artists/pierre-boulez/boulez-the-conductor-2116>.

¹⁰ Oxford Music Online, “Boulez, Pierre.”

As a composition teacher, Boulez taught annually at the Darmstädter Ferienkurse (Darmstadt Summer Courses) from 1954 to 1956 and 1960 to 1965, where he presented a series of lectures that eventually became *Penser la musique aujourd'hui*. Throughout this book, Boulez began revealing his method for utilizing total serialism in his compositions. In his works, Boulez would predetermine every aspect of the music, such as pitch, duration, and register, into a set series. Unlike serialistic works of previous composers, Boulez's use of this system was music more complex, and he would often abandon established patterns in his compositions if necessary. He utilized this approach in works such as *Poésie pour pouvoir*, *Doubles*, *Structures II*, and *Pli selon pli* composed between 1957 and 1962. Boulez also served as Professor of Composition at Basle Musik-Akademie from 1960 to 1963, and Visiting Lecturer at Harvard University in 1963.¹¹

Following the development of his serial technique, Boulez began to experiment with open form in his compositions. This led to works such as his Third Sonata (1957) for piano and *Improvisation II on Mallarmé* (1957) for soprano and nine instruments. Boulez continued to stretch the limits of his compositions and experiment with spatialization of sound throughout physical space in works like *Domaines* (1961-1968) for solo clarinet or with 21 instruments and *Figures-Doubles-Prismes* (1964).¹²

Throughout his lifetime, Boulez was known to continuously revise or extend previously written works. For example, *Le Soleil des eaux* for soprano, mixed choir and orchestra was first

¹¹ Oxford Music Online, "Boulez, Pierre."

¹² Ibid.

published in 1947, then revised three more times in 1950, 1958, and 1965.¹³ The various versions on *Pli selon pli* and *Répons* are also examples of his constant revisions. Boulez is also known to borrow from previous works to compose new pieces, including the reorchestration of sections of his *Twelve notations* (1945) for piano inserted into *Improvisation I on Mallarmé* (1957).¹⁴

In 1977, Boulez founded the *Institut de Recherche et Coordination Acoustique/Musique* as a response to his perception of musical society "...as a 'museum' culture, essentially conservative.¹⁵ The previous year, he founded Ensemble Intercontemporain (EIC) in Paris which would become an integral ensemble for this institution.¹⁶ To integrate technology and musical innovation, IRCAM served as the space that brought together researchers, scientists, musicians, and technology to evolve and collaborate. Most impressive was the performance hall within IRCAM, *Espace de Projection*, which served as the venue for many of the institution's public performances. Unlike other spaces at this time, this hall was built with versatility in mind. It was equipped with 513 rotating wall panels that allowed for extraordinary flexibility in reverberation time throughout the space. Additionally, the ceiling could be lowered in three separate panels, changing the format of the venue.¹⁷ Among the many researchers at IRCAM, Andrew Gerzso was the Technical Assistant (RIM) for the pieces Boulez composed there

¹³ Oxford Music Online, "Boulez, Pierre."

¹⁴ "Pierre Boulez," Ircam-Centre Pompidou, last modified 2019, accessed January 21, 2022, <https://brahms.ircam.fr/pierre-boulez>.

¹⁵ Jonathan Harvey, "IRCAM," in *Pierre Boulez: A Symposium* (London: Eulenburg Books, 1986), 239.

¹⁶ "About Us," Ensemble Contemporain, accessed February 22, 2022, <https://www.ensembleintercontemporain.com/en/a-soloists-ensemble/>.

¹⁷ Harvey, "IRCAM", 239.

including *Répons* (1981-1988), *Dialogue de l'ombre double* (1985) and *...explosante-fixe...* (1991-1993).¹⁸

In 1992, Boulez left IRCAM to dedicate himself to conducting and composition. This same year he signed an exclusive contract with Deutsche Grammophon and continued to record with some of the world's premiere orchestras.¹⁹ In 2003, Boulez was appointed the Artistic Director of the Lucerne Festival Academy in Switzerland.²⁰ He continued to conduct, compose new works, and revise previous pieces until his death on January 5th, 2016 in Baden-Baden.²¹

1.2 Significant Pieces and People

While at IRCAM, Boulez composed three pieces: *Répons* (1981-1988), *Dialogue de l'ombre double* (1985) and *...explosante-fixe...* (1991-1993).²² These works were composed with Andrew Gerszo serving as technical assistant and, in many instances, involved technology that was invented or developed significantly at IRCAM. Additionally, prior to working on *Dialogues*, Boulez composed another work for solo clarinet, *Domaines* (1968-1969). A closer look at these four works and the contributions of Andrew Gerzso reveal influences that led to the composition of *Dialogue de l'ombre double* and illustrate similarities between these significant works.

¹⁸ Ircam-Centre Pompidou, "Pierre Boulez."

¹⁹ Ibid.

²⁰ Deutsche Grammophon, "Pierre Boulez."

²¹ Universal Edition, "Pierre Boulez."

²² Ircam-Centre Pompidou, "Pierre Boulez."

1.2.1 *Domaines*

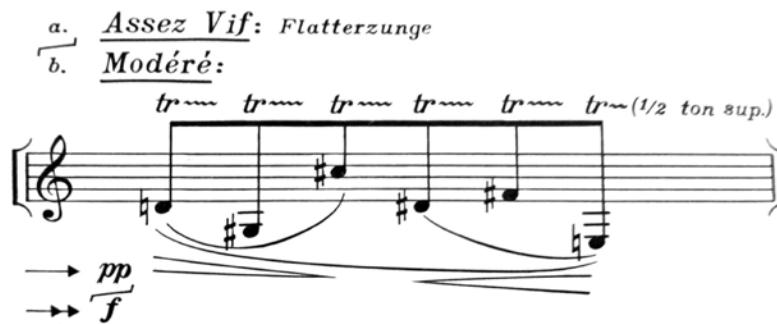
Domaines was written for solo clarinet in 1968 and reworked for clarinet and orchestra in 1969.²³ In the edition for solo clarinet, the performer controls the path throughout the piece, and the length of performance can vary based on those choices. Boulez presents six sections within the work entitled *Cahier A-F* that exists in pairs: *Original* and *Mirror*. In each section, the clarinetist will determine the structure and selects from a variety of musical markings presented below the staff. After each of the six *Original Cahiers* have been played, the corresponding *Mirror Cahiers* finish the work. With this structure, every performance of the work is unique based on a performer's choices. In the edition for clarinet and orchestra, the clarinet parts are the same, but decisions regarding organization of the sections are divided between conductor and soloist. Centered among six instrument groups that correspond to each of the six *Cahiers*, the clarinet soloist plays each *Cahier* in their choice of order. For the first half of the work (*Original*), the instrument group that corresponds to each *Cahier* answers after each section is performed by the soloist. For the remainder of the piece (*Mirror*), these six sections are repeated. This time, the conductor chooses the order of the *Cahiers* and instrument groups respond to the soloist as they did before. The final length of this work for clarinet and orchestra is 29 minutes.

The flexible format of this piece is influenced by the work of French poet, Stéphane Mallarmé (1842-1898). Albert Rice states: "Mallarmé's unfinished *Livre* utilizes moveable sheets that enable several permutations by reading left to right, omitting pages or words, and

²³ "Pierre Boulez: *Domaines*," Universal Edition, accessed January 20, 2022. <https://www.universaledition.com/pierre-boulez-88/works/domaines-2121>.

repeating words or letters in different iterations.”²⁴ Similar to the structure of *Domaines*, Mallarmé’s *Livre* is designed for flexible interpretation. Additional compositions with similar structural influences include Boulez’s *Third Piano Sonata* (1957) and *Pli selon pli* (1962).

Grove Music Online suggests that *Dialogue de l’ombre double* was a recomposition of *Domaines*,²⁵ but no currently published analyses support this claim. There are, however, similarities in the clarinet parts of these two works that suggest some overlap. For example, a similar figure in *Cahier A* in the clarinet part of *Domaines* (Musical Example 1.1) is also presented at the end of *Strophe I* in *Dialogues* (Musical Example 1.2).



Example 1.1: *Domaines* by Pierre Boulez, Cahier A.



Example 1.2: *Dialogue de l’ombre double* by Pierre Boulez, Strophe I.

Here, pitches are presented in reverse order with identical half step trills, suggesting this

²⁴ Albert Rice, *Notes for Clarinetists: A Guide to Repertoire* (New York: Oxford University Press, 2017), 28.

²⁵ Oxford Music Online, “Boulez, Pierre.”

was done intentionally. In addition, the clarinet writing in *Dialogues* and *Domaines* often features large leaps, rapid trills with emphasis on the half step, quick articulation, and extreme dynamics. While both works feature extended techniques such as multiphonics and flutter tonguing, many more occurrences of these effects are found in *Domaines*. Finally, the idiomatic writing for the clarinet in both works demonstrates a strong working knowledge of the capabilities of the instrument.

1.2.2 *Répons*

Südwestfunk (SFW) commissioned *Répons* for six soloists, ensemble, and live electronics in 1981 and the composer revised the work in 1982 and 1984. Boulez conducted the premiere of the work at Donaueschingen Festival in 1981 with technical support provided by IRCAM. Andrew Gerzso served as the assigned sound technician for this performance and helped to facilitate the technical aspects of the composition. The premiere of the second version of the work (published in 1982), occurred at the BBC Proms concerts in London and lasted 13 minutes longer than the original. Gerzso published a review of this piece in 1985 before the final publication of the work explaining that Boulez wanted the piece to last at least an hour to fill a full concert;²⁶ however, Universal Edition published the final version of the work in 1985 with a duration of 45 minutes.²⁷

The title of the work translates to “answer,” which refers to the dialogue among the three groups that comprise the piece: instrumental ensemble, six amplified soloists surrounding

²⁶ Andrew Gerzso, “Reflections on *Répons*,” *Contemporary Music Review* 1, no. 1 (1984): 23.

²⁷ “Pierre Boulez: *Répons*,” Universal Edition, accessed January 22, 2022, <https://www.universaledition.com/pierre-boulez-88/works/Répons-4375>.

the ensemble, and pre-recorded tracks to be played through a ring of six speakers surrounding the previous two groups. This focus on dialogue in the compositional process can also be seen in *Dialogue de l'ombre double*. In this work for solo clarinet and electronics, Boulez creates dialogue between the live and pre-recorded tracks that creates an illusion that the clarinetist is in conversation with itself. Additionally, Boulez utilizes six speakers that surround the audience in both *Répons* and *Dialogues* which further highlights the composer's unique use of physical space.

At IRCAM, the development of digital synthesizers led to the creation of 4X, which was the most advanced synthesizer of the institution's 4-N processor series.²⁸ In *Répons*, this new technology created an unique opportunity for real time digital processing.²⁹ Unlike this work, *Dialogue de l'ombre double* (which was composed three years later) did not utilize this advanced technology; however the use of piano reverberation in select sections of the live *Strophes* transforms live sound with alternative methods.

Boulez conducted and recorded this piece with Ensemble InterContemporain for Deutsche Grammophon in 1996; this recording was awarded a Grammy for Best Classical Contemporary Composition in 2000.³⁰

1.2.3 ...explosante-fixe...

Boulez composed ...*explosante-fixe*... for flute with live electronics, two flutes, and

²⁸ Miriam Akkermann "(Re-)Performing Early Mixed Music from the 1980s at Ircam: Pierre Boulez's *Dialogue de l'ombre double*" *Circuit* 26, no. 2 (2016): 52.

²⁹ Andrew Gerzso, "Reflections on *Répons*," 22.

³⁰ Deutsche Grammophon, "Pierre Boulez."

ensemble as a single movement work in 1991 and revised the piece in 1993 to include a second movement, *Originel*. This additional movement is a reorchestration of *Mémoriale* for solo flute and small ensemble, published in 1985. In 1994, the work was completed with the addition of a third movement and electronic interludes between the three sections of the piece.³¹ At the time of its composition, Andrew Gerzso facilitated the full automation of the electronics and utilized an innovative score-following program that could recognize pitches played by the soloist to trigger electronic responses.³² Composed ten year previous to *...explosante fixe...*, *Dialogue de l'ombre double* also includes an option to automate the electronic process; however, *Dialogues* still utilized physical tape in this process. The transition to automation using digital processes in *...explosante fixe...* highlights the incredible evolution of technology that occurred in just a few years.

Similar to other works by Boulez, the title of this work was taken from the text of a literary influence: *L'amour fou* (1937) by André Breton (1896-1966).³³ Additionally, Boulez dedicated an early sketch of this piece from 1971 to Igor Stravinsky following his passing.³⁴ The ingenuity of IRCAM allowed for the later expansions of this work that included use of a score-following program and full automation of electronics.³⁵

³¹ "Pierre Boulez (1925-2016): Mémoriale(1985) ... explosante-fixe... Originel, pour flûte solo et huit instrumentistes," Ircam-Centre Pompidou, accessed January 25, 2022, <https://brahms.ircam.fr/works/work/6986/>.

³² "Pierre Boulez (1925-2016): ...explosante-fixe... (1991-1993) for flute, two solo flutes, ensemble and electronics," Ircam-Centre Pompidou, accessed January 22, 2022. <https://brahms.ircam.fr/works/work/6970/>.

³³ Annie Labussière and Jean-Marc Chouvel, "Pierre Boulez : Mémoriale (.. explosante-fixe... Originel)," *Musurgia* 4, no. 1 (1997): 42, <http://www.jstor.org/stable/40591073>.

³⁴ Labussière and Chouvel, "Pierre Boulez : Mémoriale (.. explosante-fixe... Originel)," 44.

³⁵ Peter O'Hagan, Richard Langham Smith, and Caroline Potter, *French Music Since Berlioz*, (Burlington: Ashgate Publishing Company, 2006), 328.

1.2.4 Andrew Gerzso

At IRCAM, relationships between researchers, technology, and composers were integral to creating music. Technology was constantly evolving; often new computer programs were developed at IRCAM that could not be used outside of this facility. Composers at IRCAM communicated closely with technicians while composing their pieces to ensure the proper utilization of technology throughout their work. These experts are referred to as Musical Assistants or *Réalisateurs en informatique musicale (RIM)*. Akkerman states:

Composers and rims work together on the composer's idea, and they therefore have to find ways to express and share their ideas and knowledge. On the one hand, the composer has to explain her/his artistic ideas or imagined sounds and wishes, on the other, the programmer or technician has to find an adequate solution, and can also propose technical features or sound options that might be unknown to the composer.³⁶

Andrew Gerszo served as the RIM for *Répons*, *Dialogue de l'ombre double* and *...explosante-fixe...* and published his varied perspectives on these pieces.³⁷

In each of these works, Boulez experimented with unique and often flexible formal structures and demonstrated his continued affinity for creating musical dialogue through notation, formal structures, or the use of extended technology. The compositions from IRCAM are highly experimental and showcase the capabilities of the unique institution in which they were created. Additionally, Boulez continuously referred to literature as inspiration for many of his compositions. As technology developed and became available at IRCAM, Boulez's affinity for theatricality to communicate musical ideas continually developed. Finally, the boundless

³⁶ Akkermann "(Re-)Performing Early Mixed Music from the 1980s at Ircam: Pierre Boulez's Dialogue de l'ombre double," 53.

³⁷ "Laura Zattra: Collaboration in Computer Music. An Analysis of the Role Played by Musical Assistants Obtained Through Semi-Structured Interviews (English Version)," Ircam-Centre Pompidou, last modified October 9, 2015, accessed February 18, 2022. <https://medias.ircam.fr/xb2f81c>.

contributions of Andrew Gerzso as Technical Assistant underline the incredible impact of his role.

CHAPTER 2

DIALOGUE DE L'OMBRE DOUBLE

Pierre Boulez's *Dialogue de l'ombre double* for clarinet and live electronics requires both extraordinary technical facility and musical understanding from a clarinetist, dedicated involvement from a sound technician, and use of a technologically equipped and spacious performance venue. The following section of this document explores the history of the work and provides details and clarifications regarding performance practice and technological demands.

2.1 History of the Work

In 1985, Boulez composed *Dialogue de l'ombre double* in two versions marked by Arabic or Roman numerals (*version aux chiffres arabes* or *version aux chiffres romains*). Boulez dedicated the work to Luciano Berio for his 60th birthday. Alain Damiens premiered *Dialogues* on October 28th, 1985 in Florence, Italy with the assistance of IRCAM and Andrew Gerzso as Technical Assistant.³⁸ John Bruce Yeh of the Chicago Symphony recorded and released *Dialogues* with Koch International Classics that same year.³⁹ Deutsche Grammophon released Alain Damien's recording of this work in 1998.⁴⁰

The score is currently published by Universal Edition with two dates: 1985 and 1992.

³⁸ Damien Colas, Ircam-Centre Pompidou.

³⁹ Pierre Boulez, *Dialogue de l'ombre double*. Performed by John Bruce Yeh and Howard Sandroff on *Dialogues With My Shadow*, (Port Washington, N.Y.: Koch International Classics, 1997.), CD.

⁴⁰ Pierre Boulez, *Répons; Dialogue de l'ombre double*. Performed by Alain Damiens and Ensemble InterContemporain (Hamburg: Deutsche Grammophon, 1998), CD.

The clarinet scores are both marked 1985, and the technical instructions are marked 1992.⁴¹ The IRCAM Multimedia Library references three editions of *Dialogues*. The first is published by Panopus with a copyright date of 1976; however, this score has a marking indicating it was actually from 1984.⁴² There are two additional scores, both published by Universal Edition that have copyright dates of 1989 and 1992. Although it was common for Boulez to continuously revise previously published works, these varied publication dates do not reflect such an occurrence. The year of completion and premiere is considered to be 1985 because this is the date marked in all current publications of the score by Universal Edition. Akkerman discusses the scores archived in the IRCAM Multimedia Library in her article, making it clear that Boulez revised no aspect of this work for clarinet following this date. Technical instructions were not published or included with the score until 1992, likely because the piece was performed only with the assistance of IRCAM and Andrew Gerzso in the years immediately following its composition.⁴³

In 1995, Boulez transcribed *Dialogue de l'ombre double* for bassoon and electronics at the suggestion of Pascal Gallois (b. 1959). Gallois became a member of Ensemble InterContemporain in 1981 and was an influential performer and contemporary music pedagogue.⁴⁴ Although it is unclear for whom he written it, Boulez previously transcribed

⁴¹ Boulez, *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*. Wien: Universal Edition, 1992.

⁴² Akkerman, 55.

⁴³ *Ibid.*, 56.

⁴⁴ Ryan R. Reynolds, "The History, Development, and Performance of Extended Techniques on the Bassoon with Special Focus on Philippe Hersant's Hopi and Kalevi Aho's Solo V," (PhD diss., Florida State University, Tallahassee FL, 2017), 10, ProQuest Dissertations & Theses Global.

another of his clarinet works, *Domaines*, for bassoon..⁴⁵ In an article published on the IRCAM website, Damien Colas stated, “In *Dialogues*, the music remains the same, but the different registers of the two instruments require transpositions.”⁴⁶ No published editions of either of these pieces for bassoon are available for purchase or archived in the IRCAM Multimedia Library.⁴⁷ Gallois recorded this work in 2002⁴⁸ and 2017.⁴⁹

Additional transcriptions of this work not created by the composer also exist for saxophone, recorder, and alto flute. Cécile Daroux gave the premiere performance of the version for alto flute in conjunction with the Berkeley Symphony and the Center for New Music and Audio Technologies in Berkeley, California in 2002.⁵⁰ Vincent David recorded *Dialogues* for saxophone in 2008,⁵¹ and Erik Bosgraaf recorded the work for recorder in 2015.⁵² The scores for these transcriptions are not published or widely available for purchase.

Throughout his lifetime, Boulez pulled inspiration for his compositions from the creations of many writers and artists. Most notable was Boulez’s fascination with the ideals of

⁴⁵ Damien Colas, “Pierre Boulez (1925-2016): Dialogue de l’ombre double (1985-1995) version pour basson et électronique.” Ircam-Centre Pompidou. Accessed January 22, 2022. <https://brahms.ircam.fr/works/work/6963/>.

⁴⁶ Ibid.

⁴⁷ Colas, “Pierre Boulez (1925-2016): Dialogue de l’ombre double (1985-1995) version pour basson et électronique.”

⁴⁸ Pierre Boulez, *Dialogue de l’ombre double for bassoon and electronics*. Performed by Pascal Gallois on *Dialogues*, (Stradivarius STR 33625, 2002), accessed on November 5, 2021, Naxos Music Library.

⁴⁹ Pierre Boulez, *Dialogue de l’ombre double for bassoon and electronics*. Performed by Pascal Gallois on *Pascal Conducts International Contemporary Ensemble*, (Stradivarius STR 37071, 2017), CD.

⁵⁰ “The Berkeley Symphony, Conducted by Kent Nagano,” Center for New Music and Audio Technologies, accessed February 6, 2022, https://cnmat.berkeley.edu/event/2008/03/14/berkeley_symphony_conducted_kent_nagano.

⁵¹ Pierre Boulez, *Dialogue de l’ombre double (arr. V. David)*, (performed by Vincent David on *Dialogue, Chemins, Récit...* Aeon, 2008), accessed February 6, 2022, Naxos Music Library.

⁵² Pierre Boulez, *Dialogue de l’ombre double (arr E. Bosgraaf for recorder and electronics)*. Performed by Erik Bosgraaf on *dialogues*, (Brilliant Classics, 2015), accessed February 6, 2022, Naxos Music Library.

French poet, Stéphane Mallarmé, whose work influenced many musicians of his time. Boulez composed three *Improvisations on Mallarmé* (1957-1959, 1984), *Tombeau* (1959-1961) based on Mallarmé's *Tomb of M. à Verlaine*, and *Pli Selon Pli* which Boulez subtitled "A portrait of Mallarmé." Mallarmé's unfinished *Livre* is a particular source of inspiration to Boulez with its complex web of moving parts that allows the reader to choose their path. This technique inspired Boulez to write with open form or what he called "works with a mobile path."⁵³ The structure of *Domaines* certainly mirrors this concept, however, *Dialogue de l'ombre double* leaves much less to chance. The two versions of the score provide a degree of flexibility, but ultimately the form of the work is predetermined.

A much closer resemblance to *Dialogues* can be seen in *Le Soulier de satin* (1919-1924) by French writer Paul Claudel (1868-1955). Boulez pulls the title of this composition from scene thirteen, the second day titled "*L'Ombre double*" or "The Double Shadow." Andrew Gerzso explains, "In the play the double shadow is treated as a single character. In *Dialogue de l'Ombre Double* a solo live clarinet (called *clarinette première*) placed in the middle of the hall dialogs with a kind of shadow of itself."⁵⁴ This shadow effect is seen in several aspects of the work. First, in the structure that Gerzso mentions above, the sections of the work alternate between live-performed and pre-recorded segments that present in pairs. In some ways, these pairs are shadows of their counterparts, and in other ways they emphasize the transformative quality of shadows. Additionally, the two versions of the work can be interpreted as shadows of each other that begin and end the same with alternative paths at their core. Finally, a complete

⁵³ Boulez, Ircam-Centre Pompidou.

⁵⁴ Gerzso, Ircam-Centre Pompidou.

performance of *Dialogues* involves specific adjustments to lighting, choreography, and the spatialization of pre-recorded tracks that add to the theatrical effect of the work. These ideas are addressed in more detail in the analysis of the work.

2.2 Performance Practice and Technological Demands

The published score of *Dialogue de l'ombre double* includes the *version aux chiffres arabes* and *version aux chiffres romains* for the performer, a second copy of the scores with cues for the sound technician, and a book of technical instructions. In both versions, *Sigle Initial* and *Sigle Final* bookend the work, but the organization of the alternating *Transitions* and *Strophes* are altered (see Figure 3.1).⁵⁵ The choice of score will not alter the technological requirements for the piece, however, it will change aspects of the performer's and sound technician's preparation.

A complete performance of this work includes pre-recording the *Sigle Initial*, five *Transitions*, and the *Sigle Final*. The *Strophes* are performed live with optional amplification and varied levels of reverberation specified by the composer. Throughout the technical instructions, the pre-recorded tracks are referred to as *clarinette/double* and the live sections as *clarinette/première*. The instructions mention that the pre-recorded tracks are available for rental from IRCAM, but asserts that these sections would ideally be recorded by a performer themselves.⁵⁶

The cover page indicates Andrew Gerzso himself wrote the instructions with additional

⁵⁵ Colas, "Pierre Boulez (1925-2016): Dialogue de l'ombre double (1985), version originale pour clarinette et bande."

⁵⁶ Boulez, *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*, Wien: Universal Edition, 1992.

support from Daniel Raguin and Jean-Louis Aichorn. Given the support provided by technical assistants, it comes as no surprise that these instructions were largely created by Andrew Gerzso. The five chapters of the instructions include an introduction to the work, recording procedures, spatialization instructions, lighting instructions, and labeled diagrams for clarity.⁵⁷ Many sections of the instructions are densely detailed and others leave some aspects of performance and recording to the technical engineer, making them exceedingly difficult to understand.

Gerzso's introduction gives a brief summary of the structure of the piece and general expectations for the performer and sound technician. Gerzso also describes the orientation of the performer and audience within the performance space. Boulez prefers that the clarinetist is centered in the performance hall surrounded by the audience and a ring of six equidistant speakers (see Figure 2.1). If this is not possible, a more traditional arrangement can be used (see Figure 2.2).⁵⁸

Gerzso's 1992 instructions specified audio equipment; however, the world was beginning a gradual change from analog to digital format at this time. As a result, a current performance of this work (using the digital format) would involve less equipment and can include alternative options based on the capabilities of the space and available equipment. Appendix A includes a modified equipment list utilizing currently available technology.

⁵⁷ Boulez, *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*, Wien: Universal Edition, 1992.

⁵⁸ Ibid.

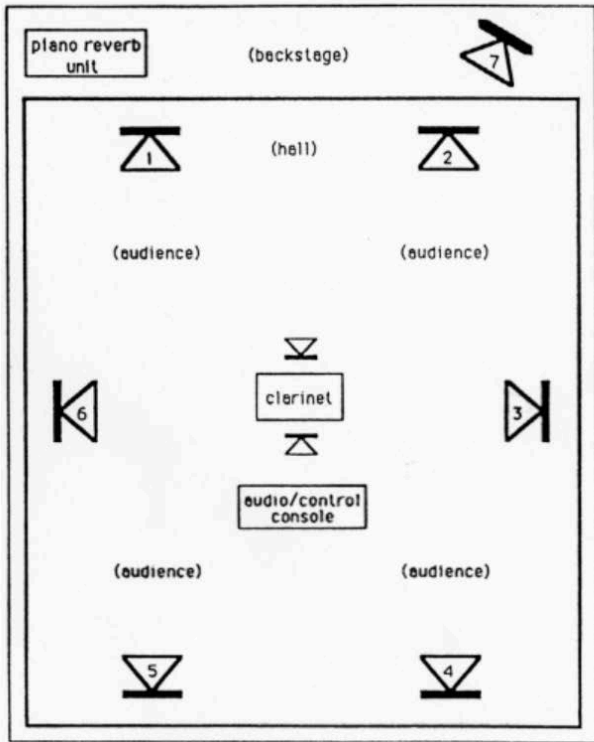


Figure 2.1: Speakers with Clarinetist Centered from Technical Instructions.

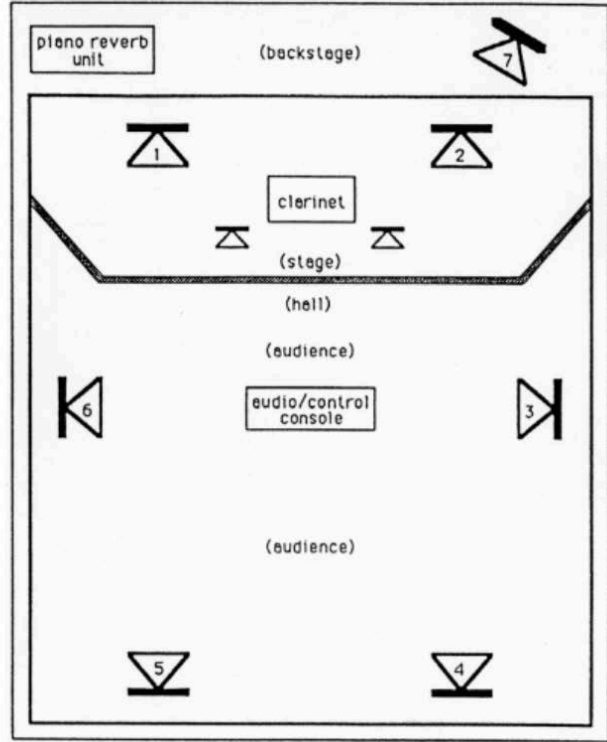


Figure 2.2: Speakers with Clarinetist on Stage from Technical Instructions.

2.2.1 Reverberation and Recording

The technical instructions also present information regarding the application of digital and piano reverb for both live and pre-recorded sections. Gerzso describes the exact levels of digital reverberation to be applied to each section of the work and adds to this effect by adjusting the balance of the direct and indirect microphones throughout.

To specify levels of digital reverberation in the pre-recorded tracks, Gerzso measures seconds of decay for this effect. Gerzso also recommends adding additional digital reverb and amplification to the live performed *Strophes* if the performance space is excessively dry (he does not specify levels for this effect). The application of reverberation through digital processing can be applied very easily live or in post-production, however, overuse or misuse of

this effect can result in an artificial quality that is less than ideal.

Piano reverberation is accomplished by routing the signal from the microphones that pick up live clarinet sound, sending this sound to a speaker placed under the piano, and catching the natural reverberation of the piano strings with a microphone placed above the strings as in Figure 2.3.

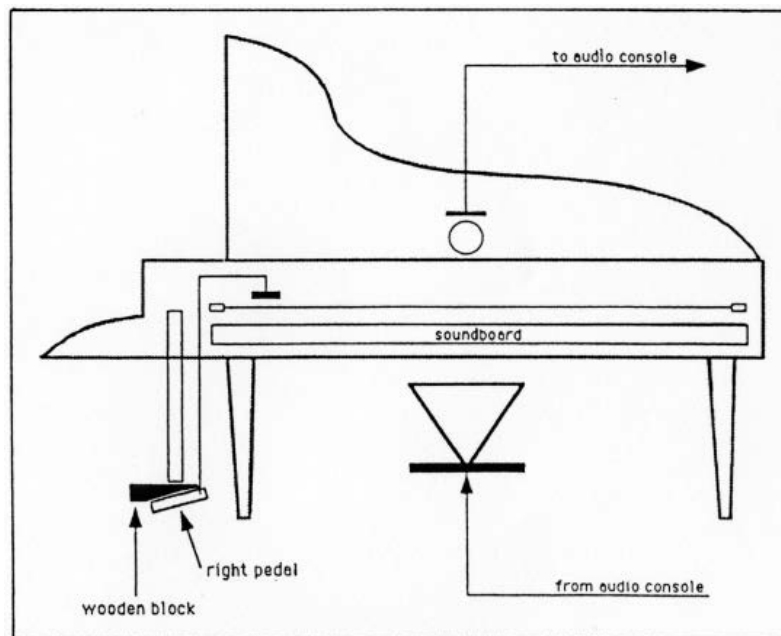


Figure 2.3: Piano Reverb from Technical Instructions.

Relative to other methodologies, this complex reverberation technique is used by few composers today because it requires so much external equipment. In *Dialogues*, it is meant to be applied in varying degrees both during the recording of the *clarinette/double* parts and the live performance of the *clarinette/première* sections. Piano reverberation produces a sound that inherently favors the 88 notes of the piano, whereas traditional reverb affects all frequencies the same. In live performance, this technique is added to *Strophes II, III, and V* in *version aux chiffres romains* and *Strophes 1, 3, and 4* in *version aux chiffres arabes*. In the pre-recorded tracks, this process is applied to *Transition de IV à V* in *version aux chiffres romains*

and *Transition de 5 à 6 in version aux chiffres arabes*. The application of this process to the pre-recorded tracks is also altered by using varying levels of direct and indirect recorded sound— a process Gerzso describes as “transformative.” The inclusion of piano reverberation in select sections of the *clarinette/première* and *clarinette/double* parts creates unique musical moments that explore space in the work and create an aural shadow. While digital systems are much simpler and can create a similar effect to piano reverberation, it would be difficult to replicate this sound exactly. The description and application of this technique signifies that the unique reverberation process should not be substituted with simpler reverberation techniques.

Although the process for creating piano reverberation is clear, the exact placement of the microphone above the piano strings is not directly specified. This placement can be loosely inferred from the included diagrams (see Figure 2.3), but any small change in the location of the microphone above the strings will affect the pitch sonorities. For live performance, Gerzso recommends one or two electrostatic microphones for the piano in his equipment list. Gerzso does not mention the option to use two microphones for this process in the *clarinette/double* equipment list or explain the need for this within his instructions, however, two microphones above the piano strings would certainly result in the best sound distribution. The exclusion of this for the recording process and failure to mention or clarify this addition throughout the rest of the instructions is odd. Additionally, the diagram shows the piano lid placement at full stick. Placement of a microphone too close to the lid or side of the piano would create a fair amount of sound distortion as the sound waves refract from the inner piano surfaces. If possible, it would be best to remove the lid all together. Otherwise, careful placement of the microphone inside the piano is advised.

A clear understanding of the detailed recording instructions for the *clarinette/double* parts is crucial to communicating the intended effect of these sections. For recording, the equipment list reflects that the piano is to be placed in the studio with the clarinetist for pre-recording the *clarinette/double* sections. Space between the clarinetist and the piano is not specified, and there is no mention of any division between the instruments. One concern of recording clarinet and piano reverb in the same space is the sound bleed between the two instruments, especially if they are placed very close together.⁵⁹ To allow for proper mixing of the tracks in post-production (as described in the technical instructions), it is imperative that the tracks are free of extraneous sound. If the recording studio is large enough, including the piano in the room with the clarinetist is certainly an option, however, there are alternatives to this approach that are more practical. For the cleanest recording, it would be best to place the piano in another studio, then to use the same recording process specified in the technical instruction. Another alternative would be to record the clarinet sound alone, then have a second recording session to feed the clarinet sound into the piano, recording the reverberation. Utilizing one of these two options would allow for the most control and flexibility of the process, making this method preferable.

The three microphones required for the recording process are specified as direct microphone (DMic), indirect microphone (IMic), and piano microphone (PMic). The direct microphone is to be placed relatively close to the clarinetist to record pure clarinet sound, the indirect microphone is placed farther away to give a sense of space, and the piano microphone

⁵⁹ In performance, the piano is placed offstage to prevent this issue.

will record the resonating piano strings. In this section, Gerzso lists where the DMic and IMic should be placed, when each of the three microphones should be in use, and when and how much digital reverberation should be added to each track.

In addition to these specific instructions, Gerzso also includes commentary describing and clarifying the intended effects and processes. For example, In the *Sigle Initial* Gerzso's comments state: "the clarinet should sound near and natural" and the recording settings reflect this intent.⁶⁰ These descriptions become essential in sections of the work that leave some aspects of the recording settings to the recording engineer. For example, the exact levels for each microphone and reverberation in *Transition de 3 à 4* are detailed in Figure 2.4.

| <i>Transition de 3 à 4</i> | | | | | | |
|--|-----------|-------------|-----------|-------------|----------------|---------------------|
| <u>DMic</u> | <u>dd</u> | <u>IMic</u> | <u>di</u> | <u>PMic</u> | <u>reverb.</u> | <u>reverb. time</u> |
| yes | 1.5 m | no | --- | no | yes | 1.8 - 2.0 sec. |
| comments: In this section there are two distinct settings for the levels of the DMic plus reverberation. The first, which applies to measures 1-6, 9-11, 14-19, 22-25, and 27 to the end of the <i>Transition</i> should be such that the clarinet should sound near and natural. The second, which applies to measures 7-8, 12-13, 20-21, and 28 should be such that the clarinet sounds heavily reverberated. | | | | | | |

Figure 2.4: Recording Instructions for *Transition de 3 à 4* from Technical Instructions.

In these instructions, Gerzso's settings do not reflect the intended settings for the entirety of the track, rather, there are two settings that the track alternates between. Gerzso explains his comments by suggesting that the DMic should be used without reverberation to create a "near and natural" sound and the DMic in combination with reverb should create a

⁶⁰ Boulez, Pierre. *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*. Wien: Universal Edition, 1992.

“heavily reverberated” sound.⁶¹ The exact settings to achieve this are left to the recording engineer. These continued comments and detailed instructions for each section make it clear that the placement of the microphones, the levels used for each microphone, and the application of reverberation is crucial in contributing to the overall arc of the work.

2.2.2 Spatialization

The process of spatialization for the pre-recorded sections can be performed manually or automatically. Performing the spatialization manually requires a sound technician to make adjustments using a mixing console live during the performance, a labor-intensive process that would require intense rehearsal. Gerzso also mentions that if one chooses to perform the spatialization manually, “some sections might require some agility on [the sound engineer’s] part.” Automation requires the technician to create code that triggers the spatialization automatically. The automated process that Gerzso describes uses the SMPTE decoder, control computer, and a VCA control unit (as listed in the technical instructions). The equipment listed for Gerzso’s automation technique uses physical tape, labeled as “Track 1 CLARINET” and “Track 2 SMPTE CODE ” in Figure 2.5.

These recorded instructions and the pre-recorded tracks are then used simultaneously. It is very unlikely that the exact automation process Gerzso describes would be used today. Instead, a digital audio workstation (DAW) of the technical engineer’s choosing would replace this external equipment in the modern automation of this process.

⁶¹ Boulez, Pierre. *Dialogue de l’ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*. Wien: Universal Edition, 1992.

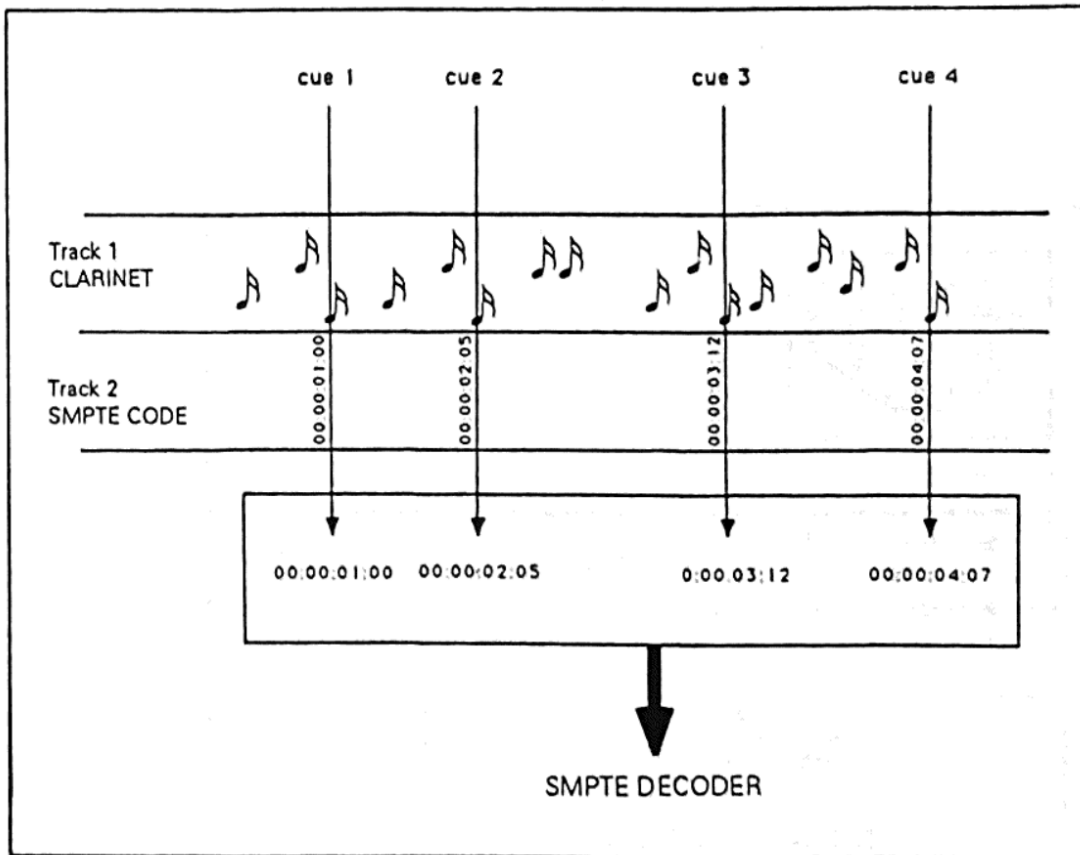


Figure 2.5: Automation Process from Technical Instructions.

Each section of the *clarinette/double* has very specific spatialization instructions listed separately for automated and manual procedures. These technical instructions are to be used concurrently with a second copy of the score that includes circled cues referencing numbered directives (seen in Figures 2.6 and 2.7). The automated instructions produce a different outcome from the manual instructions in only one instance; *Transition IV à V in version aux chiffres romains* includes much more nuanced automated instructions than its manual counterpart. Here, additional cues in boxes are only to be used with automated spatialization. In all other sections of the piece, the circled cues can be used in both manual and automated performance.

Boulez details when the speakers should be on, the rate at which they should be adjusted, and the level they should be adjusted to. Below the cues, specifically placed up and down arrows identify when each speaker and/or piano reverberation is being used. Here, three indications are presented: make the adjustment as fast as possible (ca. 0.1 seconds), make the adjustment more slowly (ca. 1.5 seconds), or make the adjustment at a rate to allow an even transition to the indicated point in the score. These detailed instructions demonstrate an exhaustive knowledge of the possibilities of the set-up. It also establishes the considerable fluency that would be required with the soundboard and the score to perform these modifications live or in post-production.

The cues in the technical instructions and scores are very clear, but the visual representation of these items does not always adequately display the process. For example, the manual instructions for *Sigle Initial* (seen in Figure 2.6) insinuates that very few speakers are in use concurrently, however, a single speaker is sometimes left on for several cues before it is turned off.

In this instance, the structure of the spatialization is much more clearly illustrated in the automated cues seen in Figure 2.7. Here, the trajectory of spatialization, growing from one speaker on to all at the very end, is very clearly pictured. It should not be considered a rule that the automated instructions more clearly illustrate the spatialization; instead, it should be emphasized that a careful and thorough examination of these instructions is required by the technical engineer to facilitate the intended effect.

Sigle initial

| <u>cue number</u> | <u>speaker(s) On</u> | <u>speaker(s) Off</u> |
|-------------------|----------------------|-----------------------|
| 1 | 1 | - |
| 2 | 3 | 1 |
| 3 | 5 | 3 |
| 4 | 2 | 5 |
| 5 | 5 | 2 |
| 6 | 4 | 5 |
| 7 | 6 | 4 |
| 8 | 3 | 6 |
| 9 | 6 | - |
| 10 | 2,5 | 3,6 |
| 11 | 4 | 5 |
| 12 | 1,6 | 2,4 |
| 13 | 2 | 6 |
| 14 | 4,5 | 1,2 |
| 15 | 3,6 | 4,5 |
| 16 | 2 | 6 |
| 17 | 4 | - |
| 18 | 5 | 3 |
| 19 | 1 | 4 |
| 20 | 6 | 2 |
| 21 | - | 1,5 |
| 22 | 4 | - |
| 23 | 1 | - |
| 24 | 3 | - |
| 25 | 2 | - |
| 26 | 5 | - |
| 27 | - | 1,2,3,4,5,6 |

Figure 2.6: Technical Instructions for Spatialization of *Sigle initial* (manual).

Sigle initial

| <u>cue number</u> | <u>speaker(s) ON</u> | <u>speaker(s) OFF</u> |
|-------------------|----------------------|-----------------------|
| 1 | 1 | 2,3,4,5,6 |
| 2 | 3 | 1,2,4,5,6 |
| 3 | 5 | 1,2,3,4,6 |
| 4 | 2 | 1,3,4,5,6 |
| 5 | 5 | 1,2,3,4,6 |
| 6 | 4 | 1,2,3,5,6 |
| 7 | 6 | 1,2,3,4,5 |
| 8 | 3 | 1,2,4,5,6 |
| 9 | 3,6 | 1,2,4,5 |
| 10 | 2,5 | 1,3,4,6 |
| 11 | 2,4 | 1,3,5,6 |
| 12 | 1,6 | 2,3,4,5 |
| 13 | 1,2 | 3,4,5,6 |
| 14 | 4,5 | 1,2,3,6 |
| 15 | 3,6 | 1,2,4,5 |
| 16 | 2,3 | 1,4,5,6 |
| 17 | 2,3,4 | 1,5,6 |
| 18 | 2,4,5 | 1,3,6 |
| 19 | 1,2,5 | 3,4,6 |
| 20 | 1,5,6 | 2,3,4 |
| 21 | 6 | 1,2,3,4,5 |
| 22 | 4,6 | 1,2,3,5 |
| 23 | 1,4,6 | 2,3,5 |
| 24 | 1,3,4,6 | 2,5 |
| 25 | 1,2,3,4,6 | 5 |
| 26 | 1,2,3,4,5,6 | - |
| 27 | - | 1,2,3,4,5,6 |

Figure 2.7: Technical Instructions for Spatialization of *Sigle initial* (automated).

2.2.3 Lighting and Additional Accommodations

The final section of the technical instructions describes specifications for lighting throughout the work. Gerzso states, “The lighting is used to accentuate the contrast between the live and pre-recorded sections of the piece. In general, during the pre-recorded sections the audience and performer are in the dark, and during the live sections only the clarinetist is illuminated.” This clearly illustrates how this effect visually represents the structure of the work. These instructions also include a modest amount of choreography for the performer in the opening *Sigle Initial* and the closing *Sigle Final*. This is explained in more detail in the next chapter.

In performance, additional accommodations not mentioned in the technical instructions may be needed for stands if the performer is using printed music and page turning is deemed distracting or impossible in dim lighting. If using multiple stands, their formation can also help to better demonstrate the structure of the piece. If the clarinetist is placed in the center of the audience, the stands can be arranged in a circle or semicircle. This design was used by Alan Damiens in his 1992 performance of the work at the Salzburg Festival.⁶² If the performer is in a more traditional location (as seen in Figure 2) the stands can be placed in a row separated slightly by each section. These flexible options introduce additional difficulties for the amplification of the performer; however, the equipment list mentions the use of a clarinet adapter to solve this problem. This item would be used to attach a microphone to the front of the clarinet, near the open tone holes for optimal audio levels. Instrument specific microphones

⁶² Alain Damiens, 2015, “Pierre Boulez - Dialogue de l’ombre double (Salzburg Festival Concert, 1992),” live performance from the Salzburg Festival, video/audio, 18:29. <https://www.youtube.com/watch?v=tRALrBqIn8s>.

are now available that perform similarly as a single unit. If the performer is going to stay stationary for the performance, a microphone on its own stand would work as a substitute for this device.

CHAPTER 3

STRUCTURAL COMPARISON AND ANALYSIS

The following section analyzes the content and structure of *version aux chiffres romains* and *version aux chiffres arabes*. Throughout the piece, Boulez combines aspects of the written score, technology, and a number of theatrical elements to emphasize formal structures, reinforce musical elements, and present dialogue between space and shadows. The following comparison and analysis facilitates a better understanding of each section of the piece as well as the structure of the work as a whole. To take a closer look at each section, this analysis follows the order presented in *version aux chiffres romains*; however, inter-section relationships in *version aux chiffres arabes* is also addressed throughout. All pitches referenced throughout this section are referred to in the key of B-flat.

3.1 Large Scale Structure

The structure of the *clarinette/première* and *clarinette/double* parts in the two versions of the score is illustrated in Figure 3.1. Here, *Strophes* and *Transitions* move almost entirely in pairs and the two versions of the work are ordered so that no pair of *Strophes* and *Transitions* appear in the same order. Additionally, there is one *Transition* in *version aux chiffres romains* and *version aux chiffres arabes* that is not used in the other version (highlighted in yellow in Figure 3.1)—all other sections of the work are nearly identical. These discrepancies are addressed further in the analysis below.

| version aux chiffres romains | version aux chiffres arabes |
|------------------------------|-----------------------------|
| Sigle initial | Sigle initial |
| Strophe I | Strophe 1 |

| version aux chiffres romains | version aux chiffres arabes |
|------------------------------|-----------------------------|
| Transition de I à II | Transition de 1 à 2 |
| Strophe II | Strophe 2 |
| Transition de II à III | Transition de 2 à 3 |
| Strophe III | Strophe 3 |
| Transition de III à IV | Transition de 3 à 4 |
| Strophe IV | Strophe 4 |
| Transition de IV à V | Transition de 4 à 5 |
| Strophe V | Strophe 5 |
| Transition de V à VI | Transition de 5 à 6 |
| Strophe VI | Strophe 6 |
| Sigle Final | Sigle Final |

Figure 3.1: Structural Comparison of *version aux chiffres romains* and *version aux chiffres arabes*.

3.2 *Sigle Initial*

The opening *Sigle initial* is musically and technically indistinguishable in each version of the work. The spatialization can be divided into four sections based on the number of speakers in use concurrently: one speaker (mm. 1-21), groups of two speakers (mm. 21-38), groups of three speakers (mm. 39-43), and starting with one to the culmination of all six speakers (mm. 43-59), which is clearly illustrated in Figure 3.2.

Throughout this *Sigle*, the speakers are kept at a consistent volume and each cue corresponds to one of the 26 irregular phrases of the piece. The final cue, number 27, turns all six speakers off as the *Sigle* concludes. Andrew Gerzso states, “There is an amusing anecdote here: Pierre Boulez wanted this increasing number of speakers to symbolize the gathering of Luciano Berios [*sic*] friends on the occasion of the premiere of the work dedicated to his sixtieth birthday.”

| <u>cue number</u> | <u>speaker(s) ON</u> | <u>speaker(s) OFF</u> |
|-------------------|----------------------|-----------------------|
| 1 | 1 | 2, 3, 4, 5, 6 |
| 2 | 3 | 1, 2, 4, 5, 6 |
| 3 | 5 | 1, 2, 3, 4, 6 |
| 4 | 2 | 1, 3, 4, 5, 6 |
| 5 | 5 | 1, 2, 3, 4, 6 |
| 6 | 4 | 1, 2, 3, 5, 6 |
| 7 | 6 | 1, 2, 3, 4, 5 |
| 8 | 3 | 1, 2, 4, 5, 6 |
| 9 | 3, 6 | 1, 2, 4, 5 |
| 10 | 2, 5 | 1, 3, 4, 6 |
| 11 | 2, 4 | 1, 3, 5, 6 |
| 12 | 1, 6 | 2, 3, 4, 5 |
| 13 | 1, 2 | 3, 4, 5, 6 |
| 14 | 4, 5 | 1, 2, 3, 6 |
| 15 | 3, 6 | 1, 2, 4, 5 |
| 16 | 2, 3 | 1, 4, 5, 6 |
| 17 | 2, 3, 4 | 1, 5, 6 |
| 18 | 2, 4, 5 | 1, 3, 6 |
| 19 | 1, 2, 5 | 3, 4, 6 |
| 20 | 1, 5, 6 | 2, 3, 4 |
| 21 | 6 | 1, 2, 3, 4, 5 |
| 22 | 4, 6 | 1, 2, 3, 5 |
| 23 | 1, 4, 6 | 2, 3, 5 |
| 24 | 1, 3, 4, 6 | 2, 5 |
| 25 | 1, 2, 3, 4, 6 | 5 |
| 26 | 1, 2, 3, 4, 5, 6 | - |
| 27 | - | 1, 2, 3, 4, 5, 6 |

Figure 3.2: Illustration of Spatialization for *Sigle Initial* (Andrew Gerzo, Ircam Centre-Pompidou).

The bulk of music in the *Sigle Initial* is fairly repetitive and stays within a limited pitch and dynamic range. Frequent swells of sound to *mp* and immediate returns to the softest dynamic (*ppp*) allows the phrases to seamlessly bleed into one another as they transition to each speaker. Irregular phrase structures, chromaticism, and the printed directive *précipité* (“rushed”) near the end of every phrase adds to the general sense of forward motion. Emphasizing the additive effect of the spatialization, the opening tempo is marked as “quarter note = 196/200” and each phrase is marked slightly slower (as the number of speakers in use begins to accumulate) until the final phrase arrives at a tempo of 160 bpm. Staying between A3 and E3, this section of the work remains in the lowest range of the clarinet, making the softest dynamics even more effective. Additionally, each phrase ends on a large leap to the

instrument's lowest note, E3, creating a percussive effect.

Considering limited range and repetitive nature of this section, the resultant effect is remarkably non-pitch centric. At this brisk tempo, chromaticism and tempo and dynamic fluctuations maintain an unsteadied effect that saturates the texture and prevents the listener from focusing on any one pitch. Without the effects and at a slower tempo, there is a pull to the repetitive E3 at the end of each phrase (emphasized by repeated *accelerando*), but the combined effects of the dense musical language and spatialization detract from any extreme pitch centrality.

In this section and throughout the piece, the lighting reinforces the larger structure of the work. For the opening *Sigle*, the clarinetist is instructed to slowly enter the stage while the pre-recorded track is being played and dim lighting illuminates the soundboard. This directive is particularly effective for the opening of the piece because it introduces the format and foreshadows the structure of the entire work. Alternating between full lighting of the performer and dim lighting on the soundboard will continue to be used throughout the work to emphasize the *clarinette/première* and *clarinette/double* parts.

To record the *Sigle Initial of Dialogues*, the direct microphone is placed closer than any other section of the piece (0.8 meters) and no additional digital or piano reverberation is to be added to this track. Andrew Gerzso describes the intended sound for this section as “near and natural.” Considering this *Sigle* is identical in each version of the score, it can be inferred that its content is imperative to the overall structure of the work. The clarinet part, recording settings, and structure of the spatialization and lighting form the foundation for the work to seamlessly evolve.

The final few bars of *Sigle initial* overlap with the first few measures of the following *Strophe*, however, the music in these final bars break previous phrase patterns and differ in each score. Musical Examples 3.1 and 3.2 illustrate the similar rhythmic figures used in contrasting musical structures.

Assez vif $\text{♩} = 144/152$

ppp *p* *ppp*

strophe I

Assez vif $\text{♩} = 144/152$ *cédé*

Clarinettes/première *p*

Detailed description: This musical score shows two staves. The top staff is a piano part with a tempo of 'Assez vif' and a metronome marking of 144/152. It features a melodic line with triplets and a dynamic range from *ppp* to *p*. The bottom staff is for the 'Clarinettes/première' with the same tempo. It begins with a *p* dynamic and includes a 'cédé' (crescendo) marking. A vertical dashed line indicates the transition point between the two sections.

Example 3.1: *Dialogue de l'ombre double* (version aux chiffres romains), transition to *Strophe I* (mm. 57-58).

Assez vif
57 $\text{♩} = 152/160$ *accel.* $\text{♩} = 160/176$

ppp *sfz* *p* *sfz*

strophe 1

Très lent $\text{♩} = 34/35$

Clarinettes/première *ppp* *son multiphonique* *pochiss.*

Detailed description: This musical score shows two staves. The top staff is a piano part with a tempo of 'Assez vif' and a metronome marking of 152/160, which then accelerates to 160/176. It features a melodic line with triplets and a dynamic range from *ppp* to *sfz*. The bottom staff is for the 'Clarinettes/première' with a tempo of 'Très lent' and a metronome marking of 34/35. It begins with a *ppp* dynamic and includes markings for 'son multiphonique' and 'pochiss.' (pochissimo).

Example 3.2: *Dialogue de l'ombre double* (version aux chiffres arabes), transition to *Strophe 1* (mm. 57-60)

These small alterations facilitate the transition between the two sections of the work. In Musical Example 3.1, the end of the *Sigle* seamlessly merges into the following *Strophe* as if it is an extension of the previous material. The transition to *Strophe 1* (Musical Example 3.2) functions as a conclusion to the *Sigle* before presenting the main musical material after these few overlapping measures. Boulez will continue to alter the final few measures of music in the pre-recorded tracks differently in each version, but never amends the *clarinette/première*

sections. These short transitory sections will also provide a moment to adjust the lighting; here, lighting slowly increases to full brightness at the start of each *Strophe* and then slowly dims again in final measures. These patterns will continue until the closing *Sigle Final*.

3.3 Strophes and Transitions

Strophe 1 in version aux chiffres romains and *Strophe 2* in version aux chiffres arabes contain the same musical material and technical instructions in both versions of the work. This first live section of the piece features a fluctuation of brisk tempos ranging from quarter note equals 144/152 to 160/172. At this tempo, extreme control over pacing is required to navigate frequent *rallentando* and *accelerando* passages. Throughout this *Strophe*, sections of playful triplet leaps juxtaposed against moments of quick half-step trills and frequent *crescendo* and *decrescendo* markings create a prolonged fluttering effect. Linear and teetering chromatic motion throughout the musical content add to overall instability and reinforce built and withdrawn momentum.

The following *Transition de I à II* and *Transition de 2 à 3* sound the same in each version of the work, but the rhythmic notation of the sections are altered (See Musical Example 3.3 and 3.4).

transition de I à II

Flottant $\text{♩} = 92$, avec des contrastes de vivacité abrupte
poco accel.

Clarinette/double en sib

Example 3.3: *Dialogue de l'ombre double* (version aux chiffres romains), *Transition de I à II* (mm. 1-2).

transition de 2 à 3
 Flottant $J = 184$, avec des contrastes de vivacité abrupte
poco accel.

Clarinette/double en sib

Example 3.4: *Dialogue de l'ombre double* (version aux chiffres arabes), Transition de 2 à 3 (mm. 1-4).

Given that Boulez was known to repeatedly revise previous editions of his works, this discrepancy reads as a notational error that was later corrected; however, Boulez never mentions this as an explanation for the two versions of the score.

In this *Transition*, the fluttering effect from the previous *Strophe* is mirrored in the many trills and tremolos marked at or below *mezzo piano*. These effects emphasize half step intervals in the trills (also found in the previous *Strophe*) and alternate between major and minor thirds in tremolos. While this does not create clear tonal implications, these intervals build familiarity and emphasize instability. In stark contrast, outbursts of *forte* accented eighth notes with preceding grace notes interrupt these moments. These two distinctive musical ideas are further emphasized by the spatialization. The instructions require all six speakers to remain on through the entire *Transition* with levels set to *mp*. During the *forte* outbursts, one speaker is raised to *f* and then immediately returns to *mp*. In Musical Example 3.5, this effect is illustrated with cues circled above the staff and the speaker numbers and levels pictured in boxes below the staff. Andrew Gerzso describes this effect as “foreground/background.”⁶³ This stark juxtaposition of sound also provides another layer of shadowing and creates a sense of physical space with

⁶³ Gerzso, Ircam-Pompidou.

volume. Boulez will continue to reference instability with pitch and musical gesture and experiment with illusions of space in later sections of the work.

The image shows a musical score for a transition in Boulez's 'Dialogue de l'ombre double'. The score is written on a single staff in treble clef. It begins with a 4/8 time signature and a tempo marking of 'Tempo' with a quarter note equal to 184 (♩ = 184). The music features tremolos and grace notes. In measure 4, there is a dynamic marking of *pp*. In measure 5, the dynamic changes to *sub.f*. The time signature changes to 3/4, and the tempo marking changes to 'Brusque/Tempo' with a quarter note equal to 200 (♩ = 200). The dynamic marking becomes *sub.ppp*. In measure 6, there is a dynamic marking of *f*. In measure 7, the dynamic changes to *mp*. Below the score, there are two diagrams. The first diagram shows an upward-pointing arrow with the dynamic marking *f* to its right and the number '6' in a box below it. The second diagram shows a downward-pointing arrow with the dynamic marking *mp* to its right and the number '6' in a box below it.

Example 3.5: Dialogue de l'ombre double, Transition de I à II (mm. 4-5).

In *version aux chiffres romains*, *Strophe II* and *Transition de II à III* correlates with *Strophe 4* and *Transition de 4 à 5* from *version aux chiffres arabes*. Creating continuity in each version, both occurrences of this *Strophe* include tremolos from G-sharp3 to B3 in the overlapping measures of the *clarinette/double* and *clarinette/première* parts. Similar to the material found in *Transition de I à II/Transition de 2 à 3*, the first 15 measures are a mysterious series of tremolos and grace notes with swells of sound throughout. Following these measures, Boulez introduces contrasting musical material: in measure 16, a sequence of short phrases with swift changes in dynamics and tempo are presented with notated rubato. Here, momentum is built, withdrawn, and built again creating an unsteadied effect. Additionally, this is one of three *Strophes* in the work that requires piano reverberation in live performance. This effect is most audible as the clarinetist plays the loudest moments of the work and a wash of sound from the resonating piano strings rings well after the clarinet stops playing. The starkly

contrasting dynamics in this section prevent the piano reverberation from excessively building and overwhelming the clarinet sound.

The following *Transition* overlaps with the previous *Strophe* for five measures. Here, the live clarinetist holds F5 for several measures and then moves to E-flat4 just before the main musical material begins. Although no part of this work can be considered strictly tonal, these few measures act almost as a tonic drone. This yearning toward F continues throughout the *Transition* and is finally resolved at the climax in measure 17.

Above the first measure of the main musical material (m. 6), Boulez writes “*Très lié et soutenu, méditatif*” or “very sustained and meditative” (see Musical Example 3.6).⁶⁴



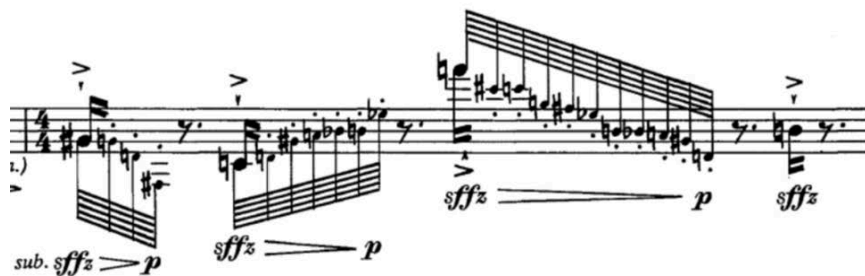
Example 3.6: *Dialogue de l'ombre double, Transition de II à III (mm. 6-7).*

Additionally, Boulez includes an asterisk next to the tempo and suggests, “The tempo can be slower than [quarter equals] 64; above all play without haste and very freely.”⁶⁵ Although this music is fairly rhythmically involved, the sustained legato and leisurely tempo establish the character of the *Transition* which is reinforced by the reverberation and spatialization. In the technical instructions, Andrew Gerzso describes the sound as “very distant.” This is achieved by adding digital reverberation (1.8-2.0 seconds) and mainly using the sound from the indirect microphone (90% indirect microphone, 10% direct microphone). The combined effect of

⁶⁴ Boulez, Pierre. *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*. Wien: Universal Edition, 1992.

⁶⁵ Ibid.

reverberation and microphone settings is that the recorded clarinet sound emerges as a shadow of itself. The spatialization reinforces this as the six speakers are used concurrently to immerse the audience in sound. The volume of the speakers gradually increases together until the climax (exactly halfway through the section), then slowly decreases until the end of the *Transition*. Given the turbulence of the previous *Strophe*, this even-tempered section compliments its opposite pair.



Example 3.7: *Dialogue de l'ombre double*, *Strophe 1* (m. 14).

The following *Strophe III* and *Transition de III à IV* correlate with *Strophe 1* and *Transition de 1 à 2* in *version aux chiffres arabes*. While this *Strophe* is just 16 measures, the tempo is marked exceedingly slow at “quarter = 34/35,” elongating the few measures that comprise this section. Boulez utilizes multiphonics throughout this *Strophe* that are overblown from pitches in the clarinet’s low register; unlike other similar effects on the instrument, these multiphonics are profoundly flexible and produce a wide spectrum of sound. Boulez embraces this flexibility by writing elongated passages that slowly crescendo and decrescendo, highlighting how the sound transforms at different dynamic levels. This is further emphasized by the use of piano reverb throughout the *Strophe* which becomes more pronounced at louder dynamics. Placed amidst these magical moments are outbursts of quickly articulated passages that are marked *sfz* at the start and quickly decrescendo to *p* (Musical Example 3.7).

The dynamic structure of these outbursts allows the piano reverb to naturally decay with the clarinet sound. Although these figures always fall on the beat, the excessively slow tempo and extraordinarily fast burst of notes negates any feel of periodicity or meter.

Similar to notational discrepancies found in previous *Transitions*, *Transition de III à IV/Transition de 1 à 2* also present differences between each version of the score (see Musical Examples 3.8 and 3.9).



Example 3.8: *Dialogue de l'ombre double (version aux chiffres romains), Transition de III à IV (mm. 5-8).*



Example 3.9: *Dialogue de l'ombre double (version aux chiffres arabes), Transition de 1 à 2 (mm. 5-8).*

Unlike the previous discrepancies, these *Transitions* include many of the same pitches and melodic contour, but there are adjustments to pitch content that allow the lines to fit within the respective subdivisions of each score. Boulez does not explain the reason for these alterations in the score or in any published materials, but the final measures of each *Transition* that overlap with the following *Strophe* provide one possibility: by re-notating the subdivision, Boulez is able to dovetail this *Transition* with the following *Strophe* (see Musical Examples 3.10 and 3.11).

Transition de III à IV/Transition de 1 à 2 begins with a long note (D4) that overlaps with

the final measures of the *clarinette/première* part. Throughout the section, D4 or C4 are always the longest note in each phrase and end each segment; C4 functions similar to a leading tone and pushes the ear forward and D4 makes the listener feel momentarily grounded. The occasional addition of half and whole step trills on these notes provides further agitation and disorientation. In previous sections, Boulez exclusively uses half step trills, but here he moves freely between whole steps and half steps. Forward momentum is further emphasized with continuously elongating lines of sixteenth notes and tempo markings that accelerate from “quarter = 140” to 184 bpm near the end.

revenir très rapidement à ————— Très rapide $J=152$

strophe IV
Très rapide $J=152$, avec une extrême volubilité, mais ne pas jouer dans la force

Clarinette/première

Example 3.10: *Dialogue de l'ombre double (version aux chiffres romains), Transition de III à IV* (mm. 34-38).

Assez vif $J=144/152$

strophe 2'

Assez vif $J=144/152$, flexible, fluide, calme
cédé - - - Tempo ralenti - -

Clarinette/première

Example 3.11: *Dialogue de l'ombre double (version aux chiffres arabes), Transition de 1 à 2* (mm. 35-38).

For the spatialization in *Transition de III à IV/Transition de 1 à 2*, the technician is

instructed to start at the first speaker and rotate the sound from speaker to speaker clockwise, continuously, and accelerating in relation to the pacing of the movement. Andrew Gerzso makes a special note in the technical instructions in regards to these effects, he states, “The maximum rotation speed should never give the listener the impression that the sound is everywhere simultaneously and therefore immobile!”⁶⁶ In *version aux chiffres romains*, this *Transition* is in the very center of the piece; the central location of this section creates a feeling of the piece rotating around itself. In a broader sense, the circular motion emphasizes the alternative paths created by the existence of this work in two versions.

The following *Strophe IV* from *version aux chiffres romains* correlates to *Strophe 6* in *version aux chiffres arabes*. At the beginning of this section, Boulez presents a precarious series of overlapping sixteenth notes between the pre-recorded and live sections that set the brisk tempo for the remainder of the *Strophe*. This section maintains its quick tempo throughout; instead of relying on *rubato*, varied rhythmic content, or tempo fluctuations, this section relies on pitch content, articulation, and dynamics to provide musical variety. Three kinds of material comprise the entire section: sixteenth note figures, articulated sixteenth note passages on a single note, and whole step trills. Unlike previous sections of the work where half step trills were largely dominant, this is the first *Strophe* to rely completely on whole-step trills. Emphasizing its repetitive and insistent nature, this is one of the longest *Strophes* in the work and does not include piano reverberation.

Transition de IV à V in *version aux chiffres romains* is made up of short outbursts of

⁶⁶ Gerzso, Ircam-Centre Pompidou.

sixteenth notes and gracenotes at varying dynamics.⁶⁷ Here, Andrew Gerzso refers to the spatialization as a zig-zag pattern that highlights the musical content of the section.⁶⁸ Gerzso states, “[The musical phrases] are like short bursts. In order to highlight this aspect, each phrase is projected onto a new speaker each time following an irregular path.”⁶⁹ This path through the speakers is depicted in Figure 3.3.

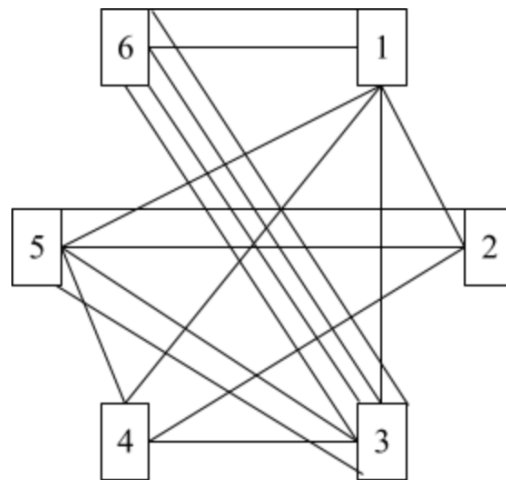


Figure 3.3: Zig-Zag Pattern (*Transition de IV à V*).

In this figure, an emphasis on motion or lack of motion between particular pairs of speakers become apparent, but no clear pattern emerges. Additionally, this is the only section of the work that includes alternate instructions for using automated spatialization instead of executing it manually. The automated instructions add extra complexity to the spatialization, explaining when each speaker is on and also assigning a specified dynamic level for each speaker. In the manual instructions, the speakers are to remain at a constant dynamic. While no

⁶⁷ The *Transition IV à V* is not presented at any point in the *version aux chiffres arabes*; it instead moves *from Strophe 6* directly into the *Sigle Final*.

⁶⁸ Gerzso, Ircam-Centre Pompidou.

⁶⁹ Gerzso, Ircam-Centre Pompidou.

explanation for this is provided, these differences likely reflect the decreased feasibility of performing these specific adjustments in real-time during performance.

In *version aux chiffres romains*, the following *Strophe V* and *Transition de V à VI* are the same as *Strophe 3* and *Transition de 3 à 4* in *version aux chiffres arabes*. This *Strophe* presents thirty short phrases composed of insistent quarter notes with preceding grace notes. Creating an echoing effect, the dynamics alternate between extremes and repeated *rallentando* with immediate returns to tempo build and withdraw momentum (see Musical Example 3.12).



Example 3.12: *Dialogue de l'ombre double, Strophe V* (mm. 43-45).

Within these patterns, the softer sections repeat the pitch content of the louder sections with slight variations like a shadow presents an outline of a figure. This section is marked at a brisk tempo of “quarter = 200;” extreme control over pacing is required to maintain the repetitive nature of this section. Similar to the application of piano reverb in previous *Strophes*, the dynamic variation of this *Strophe* allows the piano reverb to be applied effectively without overwhelming the clarinet sound.

The following *Transition de V à VI/Transition de 3 à 4* alternates between three musical ideas: light tremolos (Musical Example 3.13), fortissimo *staccatissimo* eighth notes (Musical Example 3.14), and fluttering leaps in alternating subdivisions (Musical Example 3.15). At first Boulez seems to rotate through each musical idea before introducing repetition, but this pattern is broken by the third iteration.

Flottant $\text{♩} = 184$ sub. *ralentir* - - -

sub. *p* *mf* *p*

Example 3.13: *Dialogue de l'ombre double*, Transition de V à VI/Transition de 3 à 4 (mm. 14-17).

Sub. agité $\text{♩} = 200$ *ralentir beaucoup jusqu'à* - - -

mp *ff sub.* *fff*

Example 3.14: *Dialogue de l'ombre double*, Transition de V à VI/Transition de 3 à 4 (mm. 6-7).

Modéré $\text{♩} = 104/108$, *instable*

p *mf* *p* *f* *p*

Example 3.15: *Dialogue de l'ombre double*, Transition de V à VI/Transition de 3 à 4 (mm. 9-11).

The spatialization of this section presents concepts that Gerzso introduced previously; the Foreground/Background effect, described in *Transition de I à II* and *Transition de 2 à 3*, is utilized again in this *Transition* to create an illusion of physical space. In this variation, the light tremolos and alternating leaps in mixed subdivision are background and the *fortissimo staccatissimo* eighth notes are the foreground. This effect is further emphasized by the recording instructions. Gerzso describes the mixing of these tracks in two ways: the light tremolos and alternating leaps in mixed subdivision “should sound near and natural” and the *fortissimo staccatissimo* eighth notes should sound “heavily reverberated.” This is not the first time Gerzso has described the intended sound for the *clarinette/double* part as “near and

natural.”⁷⁰ In the *Sigle Initial*, the DMic was located 0.8 meters from the performer with no additional reverb to create this same concept. The distance of the microphone in this *Transition* (1.5 meters) is appropriately located slightly farther away to facilitate better sound quality at a range of dynamics in one continuous take.

Similar to *Transition de IV à V*, *Transition de 5 à 6* is not presented in the alternate version of the score. In *Transition de 5 à 6*, the musical material is made up of brisk sixteenth note passages and varied lengths of single trills and flutter tongue. These sections include frequent crescendo and decrescendo that create waves of sound (See Musical Example 3.16).

Example 3.16: *Dialogue de l'ombre double*, *Transition de 5 à 6* (mm. 22-25).

In this track, digital and piano reverberation are both applied. Unlike previous iterations of this musical idea with piano reverberation, the dynamics are not as intensely varied as they were in previous sections and one could be concerned that the reverberation settings could overwhelm the clarinet sound. Considering these effects have been used effectively before, it seems odd that similar considerations were not taken.

⁷⁰ Boulez, Pierre. *Dialogue de l'ombre double: pour clarinette/première sur scène et clarinette/double enregistrée*. Wien: Universal Edition, 1992.

In the spatialization, notes with flutter tongue and trills are always sent through two or more speakers and the lines of sixteenth notes are always sent to a single speaker. Similar to *Transition de IV à V*, the speakers flow through an irregular path, an effect previously described as a “Zig-Zag” pattern.⁷¹ The utilization of this intentionally randomized path accentuates the bursts of sound presented in the clarinet part.

Strophe VI in *version aux chiffres romains* corresponds to *Strophe V* in *version aux chiffres arabes*. This *Strophe* interrupts the previous *Transition* with a fortissimo overblown multiphonic on F-sharp4. The first half of the *Strophe* maintains the intensity created in the very first notes with insistent rapid technique and dynamics sustaining at or above *forte*. There is also an insistence in the interruptions of F6 held at *fff* for several measures placed throughout the section. In *version aux chiffres romains*, a similar emphasis on D6 presents in the following *Sigle Finale*. The final 20 measures of this section create a moment of reprise. Here, the tempo changes from “quarter = 104/108” to 86/90 bpm and Boulez alternates between flutter tongued eighth notes and short legato phrases. The final note of this *Strophe* launches into the next section on low E3 with flutter tongue that crescendos to *fff*.

3.4 *Sigle Final*

Sigle final is nearly the same in both versions of the work, however, the opening measures in *version aux chiffres arabes* are extended slightly to facilitate the transition from the previous *Strophe*.⁷² This *Sigle* can be divided into two sections: mm. 1-63 that grows in

⁷¹ Gerzso, Ircam-Centre Pompidou.

⁷² This two measure extension provides an explanation for different measure numbers referenced in the spatialization and lighting instructions between the *version aux chiffres romains* and *version aux chiffres arabes*.

agitation and mm. 64-139 that becomes increasingly distant. The music throughout this *Strophe* is technically demanding: large leaps across registers, fast articulation, and a wide range of quickly shifting dynamics across the full range of the instrument all add to its complexity. The first 24 measures feature music marked as two distinct characters: *agit , mais murur * (agitated, but murmuring) and *comme une brusque interjection* (like a sharp interjection). Measures 25-63 further destabilize the listener with constant shifts in and out of compound meters and swift tempo fluctuations from “quarter = 116 to 152.” Throughout the first section of this *Sigle*, speakers accumulate and grow in volume from *mf-f* as they are added and the level of digital reverberation added to the track increases from 1/10 to 10/10. These effects in combination emphasize the forward momentum created in the clarinet part.

Although this track is pre-recorded, the live *clarinette/premi re* still plays a role in concluding the work. In measure 64 (mm. 66 in *version aux chiffres arabes*), the clarinetist begins playing D6 at *pp* and will sustain this until the closing of the work (see Musical Example 3.17).

63

Clarinet premiere

Tr s agit  J=152*, d'un caract re persistant et r p titif

mf *f* *fff*

(“chemins”) → tenir jusqu’ a la fin **

pp sempre

Example 3.17: *Dialogue de l’ombre double, Sigle Final* (mm. 63-65).

Ten measures previous to this entrance, the clarinetist is instructed to turn 180 degrees and remain this direction until the conclusion of the performance. This directive not only adds to

the theatricality of this moment by creating a physical disconnect, but also allows for an audible distancing of the sound.

The second half of the *Sigle Finale* skillfully uses a combination of effects to allow the live clarinet sound to become increasingly more prominent through the rest of the work. The notated *clarinette/double* part, however, does not reflect the distancing effect and is instead marked *d'un caractère persistant et répétitif* (of persistent and repetitive character). In the spatialization, each speaker is gradually removed until none of the six main speakers are in use, then a seventh speaker (placed backstage) is used for the last measures of the *clarinette/double* part. Further enhancing this effect, the clarinet sound from the direct microphone is slowly removed, leaving only the reverberation, and the sound from the indirect microphone increases. Finally, the lighting dims at the entrance of the *clarinette/première* until the conclusion of the work. The combination of these gradual adjustments produce the most distant sound in the pre-recorded tracks and create an overall illusion of space.

This *Sigle Final* starkly contrasts the opening *Sigle Initial* of the work. The forward momentum created in the opening section acts as an extension of the material found in the previous *Strophe*. If the opening movement of the work is meant to depict the gathering of Berio's friends at the premiere of the work, this *Sigle Final* might better depict the chaos at the height of the party and the final guests departure.

3.5 Salient Features of the Work

Comparing and analyzing the two versions of *Dialogue de l'ombre double* reveals organizational concepts that Boulez employs to connect the entire piece. The structure of the piece (both large and small-scale), utilization of spatialization and lighting, and the musical

content work together to take the listener on a journey through a work fundamentally concerned with space, shadows, and transformation.

While Boulez does not use traditional formal structures, the work is held together by patterns (presented and dissolved) in spatialization, lighting, and musical content that allow the work to seamlessly evolve. The opening and closing *Sigle's* and alternation between pre-recorded and live performed sections delineate the large-scale structure of *Dialogues*. Although there are two versions of the score, *Sigle Initial* and *Sigle Final* consistently bookend the work, emphasizing their structural and functional importance. Alternations between pre-recorded and live sections build familiarity throughout the work that is reinforced by the lighting instructions. In *version aux chiffres arabes* and *version aux chiffres romains*, the flexibility and complementary content of each *Transition* to its adjacent *Strophe* clarifies the purpose of the *Transitions* to smooth the path through the work. Boulez's alternation between live and recorded parts is consistent throughout, but he does not include a *Transition* after the final *Strophe*. Although Boulez does not label it this way, the first section in the *Sigle Final* serves functionally as the final *Transition*. It complements the previous *Strophe* by extending forward momentum before the entrance of *clarinette/première*, marking the start of a gradual decline to the final measures.

Boulez's consistent use of patterns in musical content are often abandoned as quickly as they are built. The juxtaposition and alternation of very different musical ideas allows for varied repetition and creation of interlocking patterns. Boulez often presents singular musical concepts and alters a few elements, like pitch content, dynamics, or pacing, to provide variety while retaining the essence of the fundamental idea. For example, in *Strophe V/Strophe 3*,

Boulez alters the dynamics, tempo, and pitch content of the *Strophe* throughout, but provides very little rhythmic variation. The following *Transition* includes some similar figures, but ultimately moves on to new musical ideas.

While no part of this work is traditionally tonal, there is a clear harmonic hierarchy that adds to the overall structure of the work. For example, *Transition de II à III/Transition de 4 à 5*, audibly centers around “F,” providing the functionality of a tonic pitch without building a key-centered focus. The emphasis on a single pitch is maintained through repetition and chromatic outlining of these quasi-tonic notes. Providing an alternate kind of focus on pitch, Boulez’s also emphasizes intervallic patterns throughout the work. For example, Boulez’s uses trills repeatedly which adds to their structural prominence and demonstrates a preference for half step trills by using them almost exclusively.⁷³ There are only two strophes that include the use of whole step trills and the inclusion of these trills is aurally jarring.

The use of ornamentation such as trills, tremolos, and grace notes are used either as a non-pitch-centric effect or to emphasize pitch sonorities. In some sections, these items emphasize prominent notes and intervals. For example, the tremolos in *Transition de I à II/Transition de 2 à 3* alternate between major and minor thirds. While there is no true pitch center here, the prominence of this interval in these effects create an aural focus. In excessively repetitive moments, there is a transformative effect that occurs as these ornaments shift seamlessly from pitch to noise. In these moments, the use of these items creates instability or

⁷³ *Transition de III à IV/Transition de 1 à 2* uses a mixture of half and whole step trills and *Strophe IV/Strophe 6* uses only whole step trills. All other sections of the work use only half step trills.

adds to forward momentum. These patterns throughout the work create a sense of familiarity in their use and, as these systems are broken, maintain a vigilant listener.

The theatricality of lighting, choreography for the performer in the opening and closing sections of the work, and spatialization of sound through the speakers combine to create a performance that clearly builds on literary influences. Paul Claudel's play, "The Satin Slipper," takes place in many different locations and times. These concepts of travel and time are reflected in the recording effects, spatialization, and written score. The scene, "*L'Ombre double*," is clearly reflected in the many references to shadows throughout the musical content, structure, spatialization, and recording techniques. A direct reference to the double shadow can be seen in the emphasis on parts of the work existing in pairs: *version aux chiffres romains* and *version aux chiffres arabes*, *Strophes* and *Transitions* moving in units, and the *Sigle Initial* and *Sigle Final* bookending the work. There is also an emphasis on transformation, which can be seen in the language used by Andrew Gerzso through the technical instructions, the reverberation effects, use of spatialization, and the extended techniques utilized by Boulez in the written score.

Although this work exists in two versions, *version aux chiffres romains* is the preferred version in performances and recordings. The premiere and recording of the work by Alain Damiens, as well as the recordings for bassoon, saxophone, and recorder, have all used *version aux chiffres romains*. Additionally, the published materials by Andrew Gerzso and others found on the IRCAM website only refer to the sections from this version. There is no indication in the score or any other published documents that one version should be favored more than the other; instead, they are presented as alternative versions of the same work with reordered

Strophes and Transitions. A potential explanation for why the *version aux chiffres arabes* is less performed comes in the notation discrepancies in *Transition de I à II/Transition de 2 à 3*. Here, the notation in *Transition de I à II* would be considered ideal because of the slower tempo and simpler subdivisions. Additionally, in comparison to other sections of the work, *Transition de 5 à 6* does not include enough extreme dynamic fluctuation to prevent the digital and piano reverberation from overwhelming the clarinet sound. Finally, the differing order of the internal elements creates alternate arcs through the work. These items in combination, makes the *version aux chiffres arabes*, seem like an afterthought.

This dynamic work for clarinet and electronics provides the clarinetist, technician, and listener with a plethora of interesting material and unique challenges. Boulez's consistent use of patterns, even as they are abandoned, are skillfully placed throughout the musical content and spatialization effects. The contributions of Andrew Gerzso in the spatialization, lighting, and recording of this work amplify Boulez's intentions. The resultant piece is one that creates and builds expectations to communicate within space and shadows.

CHAPTER 4

PRACTICAL ADVICE FOR STUDY AND PERFORMANCE

An effective performance of this work requires careful study from both the technical engineer and clarinetist. For the sound technician, preparation includes recording and mastering seven pre-recorded tracks with spatialization in advance of the performance, preparation of the rehearsal and performance spaces, and a detailed, fluent knowledge of expectations for performance. For the clarinetist, preparation of this piece is divided into three segments: recording of *Sigle Initial*, five *Transitions*, and *Sigle Final*, preparation of the live performed *Strophes*, and rehearsals to merge these two items together.

All of the pre-recorded tracks overlap with the live performed *Strophes*. Some of the transitions are quite simple, but in many instances rhythmic elements directly overlap or the tempo for the following section is drawn from the final bars of the previous section; these moments require careful coordination. To aid in this process, the clarinetist should feel comfortable and familiar with the spatialization set-up and be able to hear the pre-recorded tracks clearly. Based on the limitations and layout of the performance space, the clarinetist may need a monitor (not included in the original equipment list) to clearly hear these transitional moments.

The technical challenges throughout this piece are abundant, but Boulez writes idiomatically for the instrument and standard fingerings are generally sufficient. There are a few exceptions that should be noted, however: *Transition de I à II/Transition de 2 à 3*, *Strophe II/Strophe 4*, and *Transition de V à VI/Transition de 3 à 4* present the clarinetist with awkward trills and tremolos across the break. The clarinetist can utilize trill keys to create correct pitches

in some of these instances, but others will require use of standard fingerings. To facilitate the sustained fast articulation on repeated notes in *Strophe IV/Strophe 6*, the clarinetist might choose to double tongue. In Alain Damiens recording of this work from 1999, it is very likely that he utilized this technique in his performance.⁷⁴ Considering this is one of the longer and most repetitive sections of the work, it is imperative that the tempo is not affected by the articulated passages to maintain musical integrity and forward momentum.

Strophe III and *Strophe VI* include the only multiphonics in the work. These multiphonics are overblown from the low register, which makes the fingerings relatively straight forward, however, immediate response at very soft dynamics can be a challenge. Additionally, some sections have written multiphonics on F4 and above (not surpassing B-flat4). While overblown multiphonics in this range are certainly possible, they are difficult to control and lack flexibility.

Strophe III/1 requires performance at an extraordinarily slow tempo (quarter = 34/35). The musical content in this section includes elongated multiphonics and bursts of articulated 128th notes. The articulated passages are very difficult to play with rhythmic accuracy, as evidenced in all of the commercially available recordings reviewed in preparation for this document.

The performance or study of this work in select sections was discussed by Susan Bradshaw in her 1996 review.⁷⁵ There is merit to her idea; sections of each *Transition* or *Strophe* could easily be studied as solo movements to work on phrasing, legato, articulation,

⁷⁴ Damiens, Alain. 2015. "Pierre Boulez - Dialogue de l'ombre double (Salzburg Festival Concert, 1992)." Live performance from the Salzburg Festival. Video/audio, 18:29. <https://www.youtube.com/watch?v=tRALrBqIn8s>.

⁷⁵ Bradshaw, Susan. "Dialogue de l'ombre Double by Pierre Boulez." *The Musical Times* 134, no 1802 (April): 202-203, 1993.

and double tonguing. This issue with performing these sections as solo movements lies in the reliance of the *Strophes* on their pre-recorded *Transitions* to bridge each section of the work together. If the performer is wanting to work on recording and mixing techniques, studying or performing selections from the work would certainly be manageable. Depending on the selections, omitting a few bars of the transitional materials at the beginning and end of a *Transition* or *Strophe* would provide the most compelling performance. Unfortunately, the work is not available for purchase in individual sections, making it difficult to obtain.

Dialogue de l'ombre double for clarinet and live electronics presents the clarinetist and sound technician with equally detailed musical content well worth study and performance. Both parties should consider advanced planning and dedication to this project required attributes to approaching this complex work. While the complexity of the many components of the score and technical instructions can be a deterrent, a complete understanding of these items will lead to a fruitful discovery of a musically rewarding work to continually study and perform.

APPENDIX A
EDITED EQUIPMENT LIST

Audio Equipment for Recording (*clarinette/double*)

In the studio (with clarinetist):

- 1 grand piano (to create reverb)
- 1 speaker (for placing under the piano)
- 3 or 4 microphones
 - 1 or 2 placed over piano strings (reverb)
 - 1 placed near (direct) and 1 placed far (in-direct) from the performer

In the recording booth (with technical engineers):

- Audio console: 4 microphone inputs, 2 outputs, and 1 auxiliary send
- Audio interface with 2 inputs
- Digital audio workstation (DAW)
- Reverb plug-in

Audio Equipment for Performance (*clarinette/première*)

- Audio console: 10 inputs (3 microphone), 7 outputs, 4 auxiliary sends
- 7 main speakers (1-6 surround and 1 offstage)
- 3 local speakers and amplifiers (amplification of clarinet and under piano)
- 1 microphone (for clarinetist)
- 1 grand piano (to create reverb)
- 1 or 2 microphones for the piano
- 1 control computer
- Audio interface (8 outputs)

Lighting Equipment

- 1 set of 6 spots for lighting the soloist and scores
- 1 set of 2 spots for lighting the audio console
- 1 lighting system control console for the two sets of spots

APPENDIX B
ANNOTATED BIBLIOGRAPHY

Boulez, Pierre. *Dialogue de l'ombre double (arr E. Bosgraaf for recorder and electronics)*. Performed by Erik Bosgraaf on *dialogues*. Brilliant Classics, 2015. Accessed February 6, 2022, Naxos Music Library.

The transcription of this work for recorder was created by the performer and no version of this published score is made widely available. Most of the work sounds up the octave from the original and, due to the nature of the instrument, clarity of pitch content is lost in addition to nuanced dynamics and other musical markings. The performer uses the score to *version aux chiffres romains* and the recreation of spatialization through in stereo is very exaggerated and disorienting.

Boulez, Pierre. *Dialogue de l'ombre double (arr. V. David)*. Performed by Vincent David on *Dialogue, Chemins, Récit...* Aeon, 2008. Accessed February 6, 2022, Naxos Music Library.

This work was transcribed for saxophone by the performer. While no score is made widely available, sections of the work sound like they are performed on soprano saxophone. Many of the extreme dynamics and effects that Boulez writes for clarinet translate very clearly in this transcription. The tempos are the fastest of its kind, making the work the shortest version at just 17 minutes and 35 seconds (all others are well over 18 minutes). The performer uses the score to *version aux chiffres romains* and the recreation of spatialization through stereo speakers is very effective.

Boulez, Pierre. *Dialogue de l'ombre double for bassoon and electronics*. Performed by Pascal Gallois on *Dialogues*. Stradivarius STR 33625, 2002; Accessed on November 5, 2021, Naxos Music Library.

Boulez, Pierre. *Dialogue de l'ombre double for bassoon and electronics*. Performed by Pascal Gallois on *Pascal Conducts International Contemporary Ensemble*. Stradivarius STR 37071, 2017. CD.

This work was transcribed by Boulez for bassoon at the request of the performer. While the score is not made widely available, the composer describes the need to shift many of the lines by register to accommodate alternate instrumentation. The 2017 recording of this work is slightly slower than Gallois 2021 recording. Some effects, such as overblown multiphonics, have been slightly altered to better fit the capabilities of the instrument. The presence of the piano reverb is affected by the register and very softest dynamics, most notable in the opening *Sigle Initial*, have been lost in this transcription. Gallios uses *version aux chiffres romains* in both recordings of the work and the recreation of spatialization in stereo is very effective.

Boulez, Pierre. *Répons; Dialogue de l'ombre double*. Performed by Alain Damiens and Ensemble InterContemporain. Hamburg: Deutsche Grammophon, 1998. CD.

Alain Damiens premiered this work the year of its composition. Deutsche Grammophon released *Dialogues* on this album with *Répons* (also composed at IRCAM) that was conducted by the composer himself. This recording highlights Damiens exceptional technique and flexibility. Much information can be gleaned from careful study of this

recording. The performer uses *version aux chiffres romains* and the recreation of spatialization through stereo speakers is very effective.

Boulez, Pierre. *Dialogue de l'ombre double*. Performed by John Bruce Yeh and Howard Sandroff on *Dialogues With My Shadow*. Port Washington, N.Y.: Koch International Classics, 1997. CD.

John Bruce Yeh currently serves as Assistant Principal and E-flat Clarinetist of the Chicago Symphony Orchestra where he has performed since 1977. He had collaborated with Mr. Boulez on many projects when Boulez served as guest principal conductor of the Chicago Symphony Orchestra throughout much of the latter half of the 20th century. This particular recording was done in collaboration with Howard Sandroff as technical engineer, who was an invited composer at IRCAM in 2009. This was the first recording made available of this work. Yeh uses *version aux chiffres romains* and the recreation of spatialization through stereo speakers is very effective.

Damiens, Alain. 2015. "Pierre Boulez - Dialogue de l'ombre double (Salzburg Festival Concert, 1992)." Live performance from the Salzburg Festival. Video/audio, 18:29.
<https://www.youtube.com/watch?v=tRALrBqln8s>.

This video provides a unique view of the performer and sound technicians that allows some observations regarding equipment, lighting, and performer orientation.

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