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Creating Mobile and Open Form Music: Composing New Music Through the Lens of Brown, Feldman, Stockhausen, and Fox

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A thesis submitted in partial fulfilment of the University's requirements for the Degree of Master of Research

Certificate of Ethical Approval

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Abstract

The 1950s was an era that saw considerable experimentation within music, particularly in music composition, and interpretation. Through techniques such as indeterminacy and chance operations, the traditions of music-making were challenged. This thesis explores significant points in history, where the development of mobile composition techniques presented new creative processes in the production and interpretation of music, and aims to expand on the documentation surrounding the use of mobile and open forms within music composition.

A select number of seminal works of the 20th century Avant-Garde, including Earle Brown, Morton Feldman, and Karlheinz Stockhausen, along with a work from the 21st century by Christopher Fox, are analysed to evaluate developments in composition techniques and processes, and the impact they had on the realm of interpretation and performance. Contemporary musicological studies, in conjunction with music scores, are examined to understand the implications of mobile composition techniques.

The analysis of mobile and open forms is rooted in autoethnographic and practice-based forms of research, drawing upon reflection of my own experiences devising and realising music employing mobile techniques. Drawing upon this analysis, an original composition that utilises mobile and open forms has been created as an example of this new knowledge.

Acknowledgement

I would like to thank my Director of Studies Dr. Tom Williams for which this process would have been near impossible if it was not for his inspiration, curiosity, and motivation.

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Introduction

Improvisation is an integral process within the domain of music and has been utilised throughout the history of music-making. Composers have devised many ways of incorporating improvisation within their music to add flexibility and mobility to develop composer-performer dynamics.

A new level of flexibility was achieved by composers through increasing interpretive freedom to elements that form a music composition. Elements such as structure, instrumentation, timbre, pitch, and rhythm.

Mobility could be defined as enabling, typically fixed, components a degree of unexpectedness, leaving the realisation of these components to the performer, in order for them to devise prior to or during the performance of the music. This could be through the use of improvisation of pitch, form and placement of sections of music, rhythmic, and temporal qualities of notes.

Mobile, or open forms increased in popularity, as a viable technique of music composition, in the 20th century with composers experimenting with its process and outcomes. However, saying this, mobile forms have not been subjected to extensive analysis relative to other techniques of composition, therefore this research will prove a relevant addition to the body of work that exists already.

This thesis will focus primarily on the introduction of mobility to structural form, analysing existing compositions whose key characteristic of mobility is that of structural flexibility. Mobility of other musical elements, such as those listed above, will be analysed also. This analysis aims to culminate in the generation of an original music composition to support this thesis.

The motivation for this research topic was an in-the-moment experience in which the idea of performers partaking in the construction of a piece of music generated an interest to investigate further. No prior knowledge of mobile forms influenced this experience, rather, it

was conjured ‘out of thin air’. I had involved myself within activities of improvisation in solo and ensemble music-making leading up to the moment, which no doubt had inspired the concept. The original idea that had triggered my intrigue was performer interaction with the structural elements of music, assembling given material as if it were a set of building blocks, hence the focus of this thesis revolving around mobility of structure.

This research will concentrate on context, analysis of existing works, and generation of an original composition. A topic worth researching in the future which, however, falls outside the scope of this thesis is the introduction and testing of exposure to mobile music within a music education setting. I believe there can be beneficial implications to utilising mobile music within the realm of interpretation and performance, by encouraging students to venture outside of the rigidity of the standardised, Western practice of music interpretation.

Definition of Key Terms

Mobile is a general descriptor used to describe music whose elements have been formed in such a way that allows for the manipulation of such elements by the performer/s.

- Pitch written down but not assigned rhythmic values allowing the performer to manipulate the timing of these pitches in any given performance.
- Symbols written down that do not specify a particular sonic pitch, but outline: a general registral range; extended techniques particular to an instrument.

Mobility, in the context of this thesis, is used to acknowledge the existence of mobile elements within a composition. Mobile elements in a composition are what distinguish musical mobility, or mobility within a composition, from fixed or static music – static in the sense of what is written down is to be performed as is written.

Open Form is a sub-category under the umbrella of **Mobile**, describing compositions whose key mobile elements are structural. These structural elements can be subjected to manipulation by the performer.

- A composition written on 10 pages could have these 10 pages performed in any order, as opposed to the linear order of one to 10.
- The performer is presented with a single page, comprising small bars of music placed around the page in a disjointed manner. As instructed by the composer, the performer can choose to play these figures in any order that they choose.

Improvisation describes performative freedoms in which the performer controls musical elements such as pitch, rhythm, and timbre according to their will. The act of improvising is one of the major components of musical mobility. When the performer is given the freedom to construct the music, the performer will have to make decisions as to how they can achieve an interpretation of this music.

Improvisation is a common technique used within the genres of jazz and folk music. A typical improvisatory event could consist of a performer playing pitches that are not written down on the sheet music. An example could be a solo instrument playing improvised notes, with a band playing the underpinnings of the song (harmony, rhythm) to keep the performance cohesive. The soloist in this example would choose a system of pre-conceived pitches, in this case certain scales and other pitch groupings, and play the notes corresponding with the chosen scales. The soloist can choose whether the notes they play will be conceived in the moment of performance, or pre-conceived before the moment of improvisation; often this plan will have been formed in previous practice sessions.

- With regards to mobile music, an act of improvisation could take the form of the musician deciding on the spot which of the sections of music to play and when.

Indeterminacy refers to a technique of composition in which musical elements are formed using chance procedures in their construction. The term indeterminacy, which can be synonymous with aleatory, can be applied not only to the act of composing but also to the act of performing.

Mobile music is a sub-category of Indeterminacy through the chance procedures applied during the performance process.

- An example of a piece of music that uses chance operations for its construction and subsequent performance would be the *Musikalisches Würfelspiel* (Musical Dice Game) attributed to Wolfgang Amadeus Mozart, in which a musician would incorporate the use of dice in order to construct a piece of music.

Literature review

There is little variety in the musicological investigations into mobile forms, these consist mostly of short chapters and papers filed within books and journals. Mobile compositional technique is often overlooked due to its development and utilisation in the 20th century, an era characterised by its abundance of music theories and developments. The majority of texts concerning mobile forms present analyses with narrow scopes, centred on theoretical implications and its relevance and purpose within the wider array of composition techniques.

With this said, each analysis of mobile forms offers comprehensive and thought-provoking questions and conclusions. A study by John Welsh provides one of the earliest complete investigations into a particularly seminal piece of mobile composition. Welsh details the artistic, aesthetic, and philosophical implications, alongside the use of open form compositional technique. To support his positive outlook of the technique, Welsh documents the revelatory (Welsh, 1994, p. 286) concept of open form and its manifestation in a selected work from prominent Avant-Garde composer Earle Brown. Welsh elected to analyse two works from Earle Brown, *Module I* and *Module II*. The analysis is the only in-depth investigation into these particular compositions and provides insight into how Brown applied open form technique to compositions written for ensemble forces.

While the open form aspect of *Module I* and *Module II* is apparent, particularly with the information presented in the foreword by the composer, Welsh attempts to analyse pitch material, texture and orchestration, and to contextualise it within the meta-structure of both *Module I* and *Module II*. Welsh introduces the reader to the analysis by identifying each musical event labelled by Brown. In the case of *Module I* and *Module II*, each event takes the form of vertical structures of specific pitches and orchestration. Welsh constructs composite scales of the pitches notated by Brown In order to decipher intervallic and harmonic relationships.

“The orchestration on pages 1 and 4 has been carefully arranged to insure [sic] that chords 1, 2, 3, and 4 may be combined in any manner without possibility of a conflict between individual parts.” (Welsh, 1994, p. 264).

Figure 1

Welsh’s constructed composite scale of page one of Module I

Note. From “Open Form and Earle Brown's Modules I and II (1967),” by J. P. Welsh, 1994, *Perspectives of New Music*, 32(1), 254-290 (https://doi.org/10.2307/833173)

Welsh connects Brown's harmonic choices to the meta-structure of *Module I* and *II* to describe how the use of mobile forms impacts the sonic characteristic of the chosen harmonies. Welsh expands on Brown's instructions regarding how the pieces should be performed, providing quotes from Brown on the matter.

Figure 2

Earle Brown's Module I, page 1

Note. From *Module I* (p.1), by E. Brown, 1970, Universal Edition Ltd.

The overall intent of the study is to promote the technique of open form composition with reference to the analysis of *Module I* and *Module II*. Welsh's work is amongst some of the earliest to detail open form comprehensively as a compositional technique and to examine its application.

Welsh's analysis portrays the positive aspects of mobile composition techniques using Brown's work as an example of its successes. In contrast, a more recent investigation by Chris Fox offers a differing and more sceptical view on the cogency of the technique.

The premise of Fox's article is the setting of compositional practices, particularly those used by the Darmstadt School, to the context of post-war political and economic circumstances. Fox proposes to discuss and to investigate the practices utilised by this specific group of composers. The group of composers which Fox analyses consists of Boulez, Maderna, Stockhausen, Nono, and Berio, amongst many other leading contemporary composers of the era associated with the school. Fox compiles his own past writings and experiences to document the musical developments of the Darmstadt School, a group he studied and worked as part of in the 1980s.

Fox approaches the discussion of structural mobility from a general point of view compared to the analysis given by Welsh on Earle Brown. Fox outlines his conclusions on open form with reference to the work of specific Darmstadt School composers, specifically the *Sonata no.3* of Pierre Boulez and *Klavierstück XI* of Karlheinz Stockhausen. The very definition of 'open form' or 'mobile' comes into question with Fox stating:

> In music, while the performer, and perhaps the score-reader too, may see all nineteen components of Stockhausen's *Piano Piece XI* at once, they can only be experienced one at a time in performance; in performance they are fixed in a single sequence through time (Fox, 2007, p. 23)

Fox analyses the theory of musical open forms within the framework of musical 'freedom', inevitably resulting in Fox presenting a negative view of the practice. He scrutinises its attempts to create music free from the traditional constraints of time and pitch, "A score may be conceptually mobile, but the concept of open-form music is an illusion" (Fox, 2007, p. 23). It is important to note the context in which Fox is analysing open form composition: he admits that open forms can afford new freedoms to performers in comparison to traditional models of composition, however, to create a music that reaches beyond its existence within time – music whose interconnected parts are visible and can move in physical space; to be observed and to have its parts interpreted separately and as a whole, in the way a mobile structure created by Alexander Calder can be observed – is "conceptual nonsense" (Fox, 2003, p. 23). He

concludes that freedom of musical elements was not achieved by the composers of the Darmstadt School in which he is evaluating.

Fox's conclusions have been drawn from an analysis and insistence on the literal 'openness' of open form composition. This line of thought concludes that open form work is not in a literal sense open. This can lead researchers to devalue the compositional practice, because of its failure to achieve openness and freedom. It should be noted that although Fox draws unfavourable conclusions on open forms in this particular writing, his later music composition *senza misura* is unmistakably open form; it follows various compositional tropes common to open form music such as arrangeable music sections and freedom of timekeeping.

The understanding of mobile music is hindered by the scarcity of documentation surrounding aspects of performance and interpretation. Frances-Marie Uitti offers insight into her experiences of mobile music from the viewpoint of the performer, demonstrating and reinforcing the key aims of mobile music composition, through her approach to the works of Earle Brown. She notes the generous and open-minded temperament of Brown (Uitti, 2007, p. 334) which allowed her to embrace the interpretive freedoms implicit within Brown's compositions. Another example of investigation into interpretive implications has been produced by John Cage. In the collection of his lectures, *Silence: lectures and writings by John Cage* of 1961, he outlines a number of thought processes that a performer will encounter when attempting to interpret a piece of mobile music. Cage's conclusions are arrived at from a theoretical perspective and is written in such a way that any performer's experience of playing mobile music will fit within Cage's encompassing characterisations.

The lack of documentation from the experiences of the performer is a harm to the beneficial potentiality of mobile music, considering that one of the primary reasons for writing a piece of mobile music is to redesign interpretive practices of the performer.

Analysis of sheet music is necessary in understanding musical concepts, how they have been implemented, and how they can be implemented in composition. Sheet music can be the distinction between categorising mobile composition as musical indeterminacy, or a tool of improvisation. Indeterminacy involving differing sonic outcomes revolving around a constant, which is its presentation through sheet music, and improvisation where the sonic outcome belongs to choices made by the performer in that moment.

As is the case with literature surrounding mobile and open forms, sheet music created for mobile music is difficult to access. This is, however, similar to the lack of availability of much of the Avant-Garde repertoire. This limits the overall scope of analysis and contextual work, and was a factor in the choice of which existing compositions to analyse. Sheet music produced by more well-known composers like Earle Brown and Morton Feldman can be found in shops, online, and in libraries, but works by lesser-known composers, if they have been printed, can only be found in libraries, or sometimes museums, and not easily accessible.

An example of readily available sheet music would be Serocki's *Arrangements*, composed 1975-76, for one to four recorders. The score consists of 17 pages described as 'segments' (Serocki, 1976, p. 2). Each segment is composed for various arrangements of the quartet: four solos, six duets, four trios and three full quartet segments.

Serocki does impose restrictions upon the performer, this is to achieve specific outcomes of continuity and relatable identity. Serocki outlines the segments that must be performed, corresponding to the chosen ensemble of instruments decided by the performers. Each segment is not to be repeated. Serocki lists specific combinations of segments, titled "variants" (Serocki, 1976, p. 2), and within each variant, the ordering of segments is left to the discretion of the performer/s.

Serocki does recommend that multiple versions of the piece be performed in the same concert, so as to feature the differing variants and subsequent segments. Serocki suggests that

multiple versions of *Arrangements* can be performed simultaneously by multiple ensembles. 8 quartets would be the “maximum possibility” (Serocki, 1976, p. 2).

Each segment is laid out in a linear fashion, following common practice. The performer reads the music from the top left and finishes in the bottom right of the page with each musical event being allocated a specific time duration (in seconds). Instrument entrances, in ensemble segments, are placed in relation to where their music fits within the broader context of the segment, leaving no option for micro-structural freedom or improvisation – a performer cannot simply start playing their respective music whenever they decide to.

Pitch material is clearly notated, including such techniques as multiphonics. Serocki includes specific finger charts for techniques like multiphonics, clearly denoting his intentions for specific pitch and harmonic textures. There are only a few instances in which there are intentional pitch ambiguities. In the case of Figure 3, Serocki specifies that the performer slide upwards over the entire instrument’s range while overblowing to achieve “unspecified composite overtones” (Serocki, 1976, p. 7).

Serocki does allow for instances of improvisation (as seen in Figure 4) and unspecified sonic events.

Figure 3

Pitch ambiguity in Arrangements segment 2

Note. From *Arrangements* (p. 2), by K. Serocki, 1998, Polskie Wydawnictwo Muzyczne.

Figure 4

An event specifically for improvisation in Arrangements segment 3

Note. From *Arrangements* (p. 3), by K. Serocki, 1998, Polskie Wydawnictwo Muzyczne.

Serocki's *Arrangements* is an example of a simple open-form compositional model. The performers choose which variant they are to play, consequently deciding on what instruments are to be used throughout the performance of the piece. As a result of this, the performers are afforded the opportunity to structure the pre-selected segments into any order of their choosing.

That is, however, the extent to which this piece is open form. The content of the composition is rigid and determined, much to the contrast of a piece such as Brown's *Twentyfive Pages*.

Performances and recordings demonstrate the sonic outcome of mobile music. This is a primary reason for creating mobile music: the performer is the catalyst for setting the music in motion. Online video-sharing and music streaming platforms provide near-unlimited opportunities for experiencing performances of mobile music: this phenomenon presents researchers not only vast materials and data to analyse, but the convenience of obtaining this data without the need to expend resources on travelling and accessing materials.

Many recordings featuring interpretations of mobile music can be found online, each offering different interpretations on the same compositions, as if each performance is of a different, separate piece of music. This illustrates the interpretive freedoms inherent in the compositional technique. For example, Karlheinz Stockhausen's *Klavierstück XI* has been approached by numerous high-level performers such as Pierre-Laurent Aimard, David Tudor, David Arden, and Prodromos Symeonidis: all interpret the large score in different ways, ensuring each iteration of the piece's performance is different and showcasing the music from different perspectives.

Attending live concerts offers the researcher the unique chance of experiencing an interpretation of a piece of mobile music that will likely never be recreated in that exact way again. From a composer's perspective, it allows the opportunity to observe how performers approach mobile music in real time, thus contributing to realisations creating a piece of music accessible to performers. This has been important in how I have conceived of elements for the original composition *Doux Languissant*.

Research Methods

The aim of this thesis and musical composition is to elucidate a specific technique of composing music which composers experimented with in great depth, particularly during the mid to late 20th century.

A written thesis alone is not sufficient to detail the application of mobile forms in music composition. For that reason, to fully engage with this technique, a music composition must be produced using the method of research through practice. The process of composing music is akin to a journey, where numerous decisions are made in order to arrive at a destination. The utilisation of structural mobility as the primary consideration of the composition alters the process of writing music, so much so the established conventions of writing music are often inadequate, and sometimes discarded entirely, facilitating new methods for the composer to portray their compositional ideas, in order to convey instructions to the performer/s. Only through the implementation of mobile form technique on composition can it be understood thoroughly, drawing any beneficial and consequential implications on the practice of composing and interpreting music.

Both the written thesis and music composition were produced in tandem to effect an autoethnographic form of research, in which both the thesis and composition could inform each other, invoking a deeper understanding of mobile technique through practice.

The primary form of research undertaken is that of literature analysis. This includes articles, books, and analysis of sheet music. Considering that mobile compositional technique is a relatively modern and experimental technique, there is not a vast amount of literature concerning the practice, however, the existing literature offers extensive analysis on the technique and its application in music writing.

Using existing analysis grants access to music that would otherwise go undocumented in an analytical sense. Marina Pereverzeva's article *Musical Mobile as a Genre Genotype of New*

Music (Pereverzeva, 2013, pp. 119-134) reviews and lists numerous mobile compositions created throughout the 20th century, as well as providing fragments of sheet music examples to support her analysis.

As part of a musicological investigation, research benefits from my ability to interpret mobile compositions onto a musical instrument. This enables me to experience the process of forming what is written on a page into sound produced by an instrument, in which I, as a performer, aid in crafting its outcome. It allows observation into how I approach interpretation of mobile music, in order to develop a greater depth of understanding about the process of interpretation. These insights prove invaluable when composing using mobile techniques, ensuring that the composing stage of the process utilises any perceptions gained from interpreting existing music.

The process of creating a composition has taken place using music software, more specifically Sibelius 7 and Dorico 2. Both pieces of software have been used to create unconventional sheet music that is presentable to a performer in order to convey the idea of the music. Mobile compositions such as *Intermission VI* by Morton Feldman, *Twentyfive Pages* by Earle Brown and *Klavierstück XI* by Karlheinz Stockhausen have provided influence for the presentational and structural aspects of my original composition. These works display practical solutions in approaching the process of presenting mobility of structure on a page to ensure accessibility to the end-user.

Mobile and open forms

> "... continuity is no longer part of musical syntax, but rather it is an optional procedure. It must be created or denied anew in each piece, and thus it is the material and not the language of the music" (Kramer, 1978, p. 179).

> "To remove continuity is to question the very meaning of time in our culture and hence of human existence" (Kramer, 1978, p. 178).

Mobile and open forms of structure, as an experimental technique of music composition, materialised in the early 1950s. The idea brought about many considerations of how music could be disseminated from the composer to the performer, and then to the audience, in ways that would result in deviations from the traditional model of music composition. To accommodate this new theory of music, composers would conceive new ways of writing, and performers were allotted a greater amount of freedom in how they approached and performed a work.

The fundamental premise of this method of composition is that the composer is tasked with providing the performer the raw musical materials to be arranged into different combinations, depending on the complexity of the material, culminating in an audible performance. This is encapsulated by the composer Earle Brown, who provided many of the experiments and developments into mobile forms. Brown describes how the scientific term synergy helps him comprehend mobile forms:

> my imagination is the first energy... I come up with a notation for a score... that's a second energy. I give this ambiguous notation to David Tudor, for instance, who is a third energy... every stage in the game is a step forward in the unexpected (Kim, 2017, P. 94)

'Open form', 'mobile', 'open structure' and 'polyvalent' are terms that have been adopted to characterise this form of composition. With regards to music, the descriptors most commonly used are mobile and open form. The term 'mobile' was inspired primarily by the 1930s' visual

art sculptures of Alexander Calder. Earle Brown appropriated the term to be used in the context of music when describing the premise of his 1953 piano composition *Twentyfive Pages*, which is a seminal composition that typifies the use of mobility and open form in music.

Figure 5

Mobile (1932) by Alexander Calder

Note. From *Mobile*, by Tate.org.uk, 2019, Tate.org.uk

https://www.tate.org.uk/art/artworks/calder-mobile-l01686

A collection of “detached bodies floating in space” (Morris et al, 1951, p. 8), a mobile sculpture is suspended in a space and can move about that space, deriving its motion from touch and flow of air. Motion is the objective of a mobile and is motivated through its construction. This consists of shapes, commonly termed as ‘forms’ or ‘bodies’, made from sheet metal (Calder Foundation, n.d.) attached to a larger structure of wires; engineered as to enable each body

to move independently of other bodies. A Mobile is therefore an entity that is in a state of constant change, no matter how or when it is presented and viewed. This idea of constant change is the source of intrigue for musicians and the application of mobile elements within music making; the idea that the sonic outcome of a piece of music can be different, sometimes radically different, upon each performance.

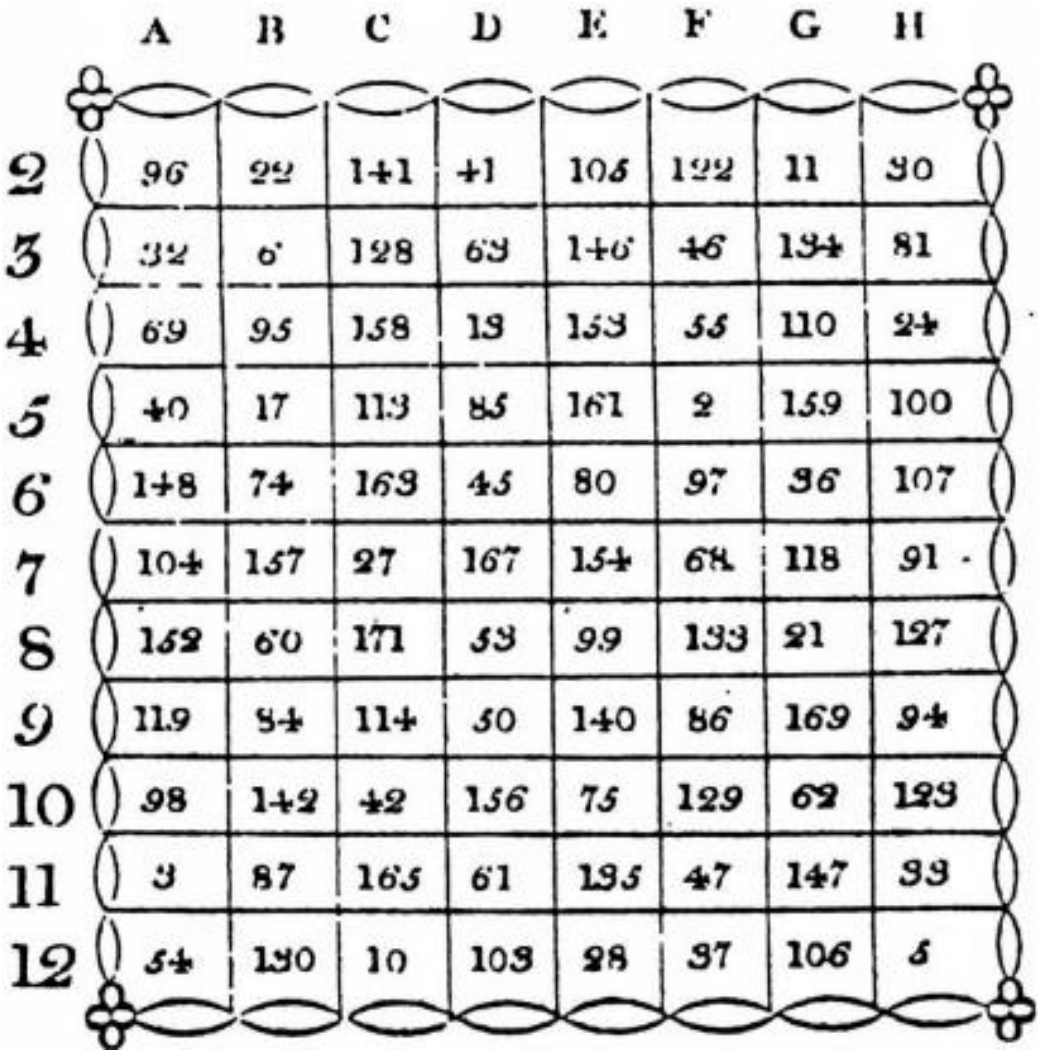
Musical mobility is conceptualised not in its movement within a space, rather, in a metaphorical sense, through the enablement for manipulation primarily of its structural elements. “To create what has become known as a mobile, the composer typically notates musical elements or events which are assembled, ordered, and combined by the players or conductors during the performance” (Welsh, 1994, p. 256). Stockhausen proclaimed about his own mobile composition *Klavierstück XI*, “the “music” has no existence (on paper) outside its realisation in terms of sound” (Stockhausen, 2011) showing that, ultimately, it is the performer and all future performers that initiate and set into motion the ever-changing state of a mobile piece of music.

Mobile techniques before 1950

The concept of mobile structures in music can be traced to the 18th century, as an effect of the ‘Musikalisches Würfelspiel’ or musical dice game, made famous by Wolfgang Amadeus Mozart. A user, regardless of compositorial skill, could produce a full piece of music without the need for knowledge of harmony, melody, and structure (Mozart, 1793, p. 1). In Mozart’s *Musikalisches Würfelspiel*, small musical events with assigned numbers are presented to the user along with a matrix of those numbers. To achieve a fully formed piece of music, the user must roll a pair of dice which awards them a number in the matrix linked to one of the small musical events.

Figure 6

Matrix table 1 for Mozart's Musikalisches Würfelspiel

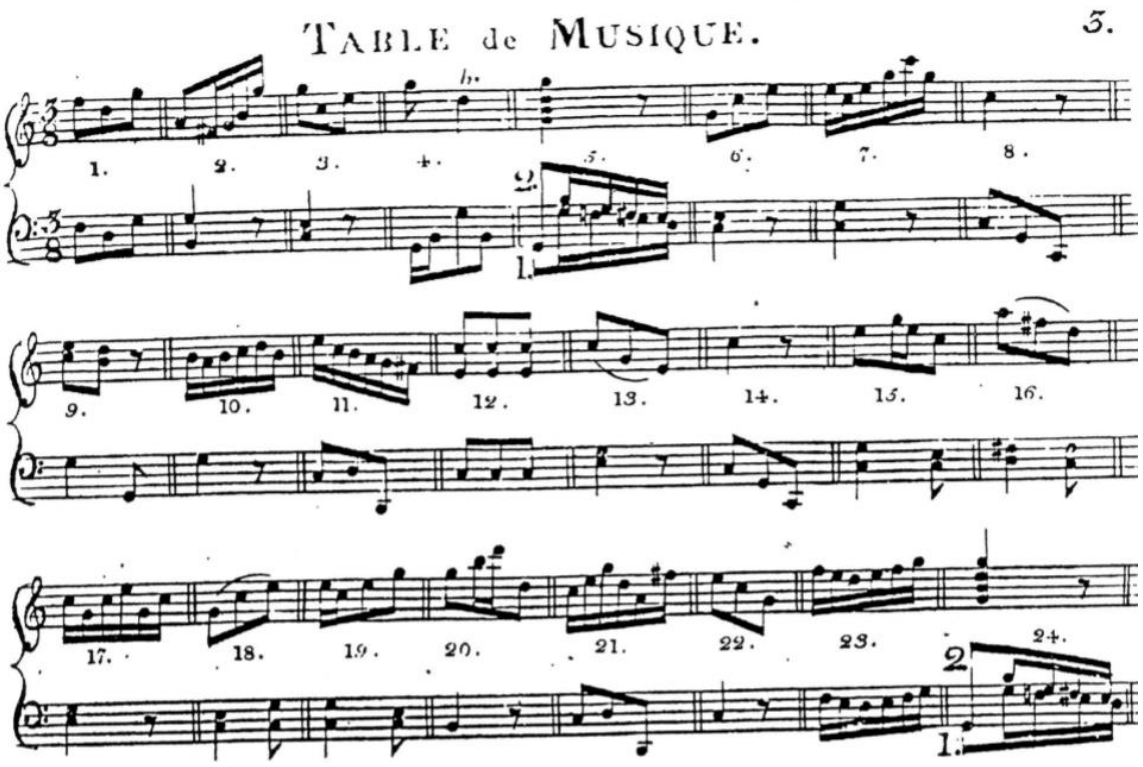


	A	B	C	D	E	F	G	H
2	96	22	141	41	105	122	11	30
3	32	6	128	63	146	46	134	81
4	69	95	158	13	153	55	110	24
5	40	17	113	85	161	2	159	100
6	148	74	163	45	80	97	36	107
7	104	157	27	167	154	68	118	91
8	152	60	171	53	99	133	21	127
9	119	84	114	50	140	86	169	94
10	98	142	42	156	75	129	62	123
11	3	87	165	61	135	47	147	33
12	54	130	10	103	28	37	106	5

Note. From *Musikalisches Würfelspiel*, (p. 2), W. A. Mozart, 1793, N.Simrock.

Figure 7

Excerpt of a list of musical events from Mozart's Musikalisches Würfelspiel



Note. From *Musikalisches Würfelspiel*, (p. 3), W. A. Mozart, 1793, N.Simrock.

The element of chance is fundamental to this method of composition. It became the foundation for the compositional practice of indeterminacy a century and a half later in the 20th century and expanded dramatically the methods in which music could be created. Open form is itself a type of indeterminacy when analysing the performance of open form music (Griffiths et al., 2001).

This musical dice game is, in its conception, an example of open form in its simplest configuration. A performer, in the case of Mozart's game a keyboardist, can arrange, using chance, the prescribed musical events into an order that can be performed whilst affording the listener a different experience each time a piece is constructed.

Other iterations of mobile structures within music arose in the early 20th century with Percy Grainger's "flexible" (Robinson, 2011, P. 296) work *Random Round* from 1912-1914, and Henry Cowell's "elastic form" (Miller, 2002, P. 4) in 1937. Cowell conferred at length with

Grainger about this flexible form of composition, remarking it a “grand idea” (Robinson, 2011, P. 299) and bringing a renewed sense of enjoyment in the creation of music (Robinson, 2011, P. 299), particularly in opposition to the standards of rigor and the complexities in the practice of music-making.

Grainger’s attraction to musical mobility grew out of his exposure to indigenous music of the Rarotongans from the Cook Islands of Polynesia. Through listening to a collection of recordings, Grainger remarked on how the songs were constructed by sections of improvisations with the singers adopting a sense of “free choice” (Robinson, 2011, P. 297) as to who sung their melodies and at which points, during the performance. He characterised this ensemble cohesion as “communal improvisation” (Robinson, 2011, P. 296) and adopted this concept in his work *Random Round*.

The mobility of *Random Round* begins with its instrumentation. When devised in 1912, Grainger stated “mandola, piano, xylophone, celesta, glockenspiel, resonaphone or marimbaphone, strings, and wind” (Robinson, 2011, P. 298) according to the availability of the instruments to the conductor with them being the arbiter of what the timbral makeup of the composition will be.

Much like the Rarotongan songs that had inspired Grainger, *Random Round* is presented as sections of music that can be fashioned into a larger macro-structure. Grainger gathered an ensemble to test his experiment and according to Robinson, Grainger was impressed with the preliminary results (Robinson, 2011, P. 299). However, Grainger seemingly abandoned *Random Round* and his concept of musical mobility from 1916 up until Henry Cowell announced his interest in the composition.

Cowell, after learning of Grainger’s *Random Round*, arrived at a method of structural mobility through writing music to be played in conjunction with dance. “Elastic form” (Miller, 2002, P. 4) was solely for the service of increasing the compatibility of music and dance: to decrease the rigidity and structure of music while simultaneously increasing the structure of dance

(Miller, 2002, P. 4), sacrificing elements of two art forms to achieve unity. The significant function of Cowell's elastic form is the opportunity to truncate or to augment the piece of music, as shown in Figure 8 below.

Figure 8

Cowell's description of possible configurations for Ritournelle from Marriage at the Eiffel Tower

Note. From "Henry Cowell Hilarious Curtain Opener and Ritournelle," by H. Cowell, 1945, *New Music Quarterly*, *19*(1), 11

Open form, defined as the opportunity to decide the temporal sequence of musical parts, is only a minor facet of Cowell's elastic form. He does however encourage musicians to explore the possibilities of arranging the sequences of music into different orders (Cowell, 1945; Miller, 2002, P. 4; Robinson, 2011, P. 300).

Grainger and Cowell arrived at their conceptions of musical mobility through considerations for performers: in a new value of musical freedoms that could be afforded through the wilful enablement of present and future performers to share in the composition-building process. This encourages a teleological explanation for the existence of musical mobility, that it is to be

understood through the purpose that it serves. Framing mobile music in these terms is sufficient for understanding its design with regards to its early usage by Mozart, Grainger, and Cowell. However, when analysing its later application in the mid-to-late 20th century, a teleological perspective can lead to a misunderstanding of its employment.

Types of mobility

The foundations for musical mobility were laid down from small-scale experiments and awaited the extensive exploits instigated in the 1950s by the likes of Earle Brown and Karlheinz Stockhausen. The development of musical mobility in the 1950s, as a compositional device, was rapid from the offset, beginning with the stark differences between the two initial mobile works of Morton Feldman and Earle Brown, *Intermission VI* and *Twentyfive Pages*. This was, in part, due to the wide-ranging developments of the many philosophical movements and methods of thought in the 20th century: movements such as post-structuralism and postmodernism, whose theories sought to critique social traditions through their assessments of linguistics, the arts and politics. The idea of music, what it is and how we create it, could be approached in a multitude of ways.

Composers with interests in musical mobility undertook a variety of experiments: using pre-existing methods of composition such as conventional notation; and others applied more modern innovations such as graphic scores. Composers developed compositions with varying degrees of mobility and structural stability (Pereverzeva, 2013, P. 120). Pereverzeva uses the term “volatility” (Pereverzeva, 2013, P. 120) to describe the specific mobile elements of a piece of music, “some have a few variants of form, which are fixed in a score and provided by certain logic. Still others have no specific determined structure, fixed in a score, and concede an unlimited number of combinations of sections” (Pereverzeva, 2013, P. 120). With this, Pereverzeva suggests that there are three degrees of musical mobility. Mobile (proper) form, variable form and modular form: **mobile** form characterising a disposition of musical elements but with minimal flexibility such as indeterminate time signatures or *ad libitum* tempos. Some works can allow for slight improvisations within the boundaries laid out by the composer;

variable form allows structural manipulation but is limited by “certain conditions” (Pereverzeva, 2013, P. 120). Serocki’s *a piacere*, with its flexibility of structure but rigidity of notation, is an appropriate example of variable form; and **modular** form characterises musical mobility at its utmost as a perfect potential principle (Pereverzeva, 2013, P. 120), comprised of disassembled, unconnected components to be realised by the performer. Brown’s *Twentyfive Pages* is an example of modular form, not only is it mobile in its macro-construction, through performing its 25 pages in any order, but also in the reading of its individual musical components given on each page.

Pereverzeva’s breakdown of musical mobility and the specific definitions assigned to the varying degrees proves useful but overly complicated and confusing. For instance, in this thesis the terms ‘mobile’ and ‘mobility’ are used as general and encompassing descriptors of composed music with elements that can be shaped by its performer. A sub-element of mobile is open form, “In ‘open form’ work, the sound content is fully described and fixed, but its parts recombined anew at each performance” (Silverman, 2012, P. 187). Open form can be applied exclusively to the indeterminacy of structural or macro-structural elements of composition. The primary characteristic of an open form work is the notion that its written musical events/groups/structures can be realised in any order irrespective of its position on the page(s).

Brown describes how open form is applied to his composition *Available Forms I* in the prefatory notes:

> There are six unbound pages of score with either four or five events on each page. The conductor may begin a performance with any event on any page and may proceed from any page to any other page at any time, with or without repetitions or omissions of pages or events, remaining on any page or event as long as he wishes (Brown, 1962, P. 3)

Open form is further explained by Brown in R. Kim's book *Beyond Notation: The Music of Earle Brown*, "that to be called open form, a work must have an identifiable content which can then be *formed*" (Kim, 2017, p.84).

Implications of mobile and open forms

Mobile and open forms question presuppositions with regards to music and its construction, by placing emphasis on the perceived hierarchies and relationships between the composer and performer. One purpose for the inception of mobile music is an increased involvement of the performer in the creative process; they are given the ultimate decision on what the audience will hear in a specific performance at that specific time, as opposed to conveying solely what the composer wants the audience to hear across all iterations of the work's performances. A simple example of this new level of involvement is the enablement of the performer to make "significant decisions about the work's macro- and microstructure" (Lesser, 2007, P. 477). As a result of this, each performance will differ varyingly across all performances, providing the listener with a new experience each time.

Brown articulates this concept in the prefatory notes to *Available Forms I*:

> There are many controls imposed upon the materials and upon the conductor and performers. The controls are, however, independent of one another until the moment of their realization as sound… at which point they are of course dependent upon each other but as an audible fact rather than as an approximated intention. A performance is a "process" which intentionally transforms the disparate independent entities into one particular integral identity… Which is this particular work performed by this particular conductor and orchestra at this particular moment (Brown, 1962, P. 3)

The nature of this manner of composing brings into question deeper aesthetical considerations of music outside of the deliberation of harmonic qualities, pitch, and timbre. Lesser and Kramer both highlight the shift in aesthetics as the traditionalised concepts of 'continuity' and 'identity' are challenged, and in cases almost discarded. This becomes apparent when considering the

experience of the listener. This type of music eliminates an identity that can be repeated through successive performances (Stockhausen, 2011), the audience experiences a version of the piece's multitude of outcomes rather than experiencing the definitive version of the piece (Stockhausen, 2011). Stockhausen furthers the idea of this shift in aesthetics by noting that continuity occurs at the moment of its sonic interpretation, and only at that moment (Stockhausen, 2011).

The identity of a piece of music is formed through the recognition of its linearity regarding two aspects: its visual presentation, codified through symbols; and its sonic presentation, a performative interpretation of said symbols. It is clear, for example, what the visual and sonic identity of Beethoven's *Piano Sonata No.14* is and recognising its visual and sonic consistencies through score publications, and through different performances and different performers (Lesser, 2007, P. 479). However, Brown's *Twentyfive Pages* would be a prime example of the complete opposite, with its use of graphic notation and the choices of playing each of the 25 pages in any order and in any orientation, "The total number of possible versions (even without allowing for the infinite differences of tempo or performances by more than one pianist) is … astronomically high" (Lesser, 2007, P. 479).

Brown's *Twentyfive Pages* does however possess a visual identity (which can be seen in Figure 11), through its use of specific and rationalised graphic notation which can be recognised over the span of its 25 pages. This visual identity is the reason for its reputation, much in a similar way to Cornelius Cardew's *Treatise*, which does not retain a sonic identity that can be duplicated across multiple different performances but respected for its visual presentation (see Figure 9).

Figure 9

Page 183 of Cardew's Treatise

Some materials have been removed from this thesis due to Third Party Copyright. Pages where material has been removed are clearly marked in the electronic version. The unabridged version of the thesis can be viewed at the Lanchester Library, Coventry University

Note. From *'Treatise': A Visual Symphony Of Information Design*, by J. Forrest, 2019, Nightingale (https://medium.com/nightingale/treatise-a-visual-symphony-of-information-design-2ced33ef01a0)

It is demonstrable that identity proves a key factor, particularly from the perspective of the listener, regarding the receival of a piece of music, how it is processed, and assigned a measurement of approval or disapproval. Identity, and the creation of it, is how we perceive and relate to all elements of the human experience whether it be to ourselves and others, or to sound waves a composer has attached a title to.

In the 1960s, Kazimierz Serocki approached open form composition with the thoughts and judgements of the audience in mind. This was a fundamental basis for the conception of his open form works; *a piacere*, *Arrangements* and *Ad Libitum*. Serocki understood how music was, and is still, interpreted by the listener, and regarded the identity of his music to be a key consideration of composition. Serocki ensured in his open form works that all musical material

presented to the performer was to be performed in a performance. He concluded that if all events were played in a single performance, the audience could develop a sense for the piece as a whole; the identity of the composition (musicinmovement, n.d.). The performer, of course, has the responsibility of ordering these events prior to or during the performance.

Mobile and open forms in practice

Historical survey

This survey will provide an analysis of existing key works that utilise mobile forms of composition. The primary focus of this survey is to observe and analyse decisive works in order to understand the ways in which composers introduced mobile forms into the practice of composition. This analysis will serve as a foundation for the understanding and the ability to apply existing techniques in producing a new music composition.

As mentioned earlier, two early seminal works produced, with continued relevancy up to today, were Morton Feldman's *Intermission VI* (Figure 10) and Earle Brown's *Twentyfive Pages* (Figure 11), both in the year 1953. These two pieces set into motion the exponential growth of mobile composition and developments within this method of music-writing.

Figure 10

Feldman's Intermission VI

Note. From *Solo Piano Works 1950-64*, (p. 5), by M. Feldman, 1998, C.F. Peters.

Morton Feldman

Feldman's *Intermission VI* is conceptually one of the simplest examples of compositional mobility. The piece comprises a single A4 page with the presentation of fifteen separate musical events placed at seemingly random areas on the page. Feldman affords the performer the choice of playing any of these events in any order.

Upon immediate observation, there is a noticeable lack of clarity, particularly surrounding such matters as the number of times a particular sonic event can be played in one performance. There are vague indications on performance instructions such as the attack, dynamics, and the timing of events. In the C.F. Peters collection of Feldman's piano works, edited by Volker Straebel, it notes that Feldman did not indicate whether all events must be played or if events could be repeated (Feldman, 1998, P. 59).

Feldman uses definite pitch content material for *Intermission VI*. The combination of pitches used to form the individual sonic events are moderate in complexity compared to other piano works of Feldman. Similar to many composers of the mid-20th Century, Feldman's harmonic language is characterised by dissonant harmonies built using clusters and their augmentations across registers to form intervals of major 7th's and minor 9th's above a root note. These harmonic qualities certainly do feature in *Intermission VI*; however, Feldman creates a much more diverse selection of pitch characters for the performer to choose from.

The lack of clarity offered to the performer in *Intermission VI* is in keeping with Feldman's surrounding compositional practices. The use of musical elements such as dynamics, tempo and general performance direction is limited but not completely absent enough to hinder the readability of the music. To a performer, this can either be perceived as unhelpful or a divergence from the more commonplace practice of rigorous notation and scoring; therefore, allowing a greater sense of freedom of interpretation. Feldman ensured that the visual layout of his scores was rigid and consistent, with the use of measure grids (Feldman, 1998, P. 57).

Figure 11

"Page 1" of Brown's Twentyfive Pages

Note. From *Twentyfive Pages*, by E. Brown, 1975, Universal Edition.

Earle Brown

Where Feldman provides minimal instruction to the performer, Brown, in his piece *Twentyfive Pages*, goes into great detail regarding the performance directions to be undertaken by the performer.

Consisting of 25 unordered pages to be played by one to 25 pianos, each page presents four systems of two lines, much like the typical piano score. However, there are no specified clef markings. This enables the performer/s to interpret freely, to a degree, the specific pitch material in the various registral spaces outlined by Brown. Additionally, each page can be interpreted either way up (realistically excluding landscape orientation), theoretically there is no 'top' nor 'bottom' of a page until the very performance of said pages; the notion of a first and last system of a particular page is effectively dictated by the performer upon interpretation. Brown ensures that the details of the score, such as accidental, dynamic, articulation, can be read in a convenient manner no matter how the page is displayed.

Brown utilises a form of graphical notation he termed 'time notation': "durations extended in *space* relative to *time*, rather than expressed in metric symbols as in traditional notation" (Brown, 1975). Although Brown has specified durations of pitches in relation to each other, it is ultimately down to the performer as to the reality of how long pitch events sound for.

Brown does specify overall performance durations of between "8mins. 20sec. and 25 mins." (Brown, 1975). This is a practical limitation imposed by the composer to keep uniformity and to impede a descent into meaningless chaos. The duration of each system can be pre-considered or arrived at during performance according to Brown, presumably as long as each of the systems keep within a consistent time duration.

With regards to pitch material, Brown has notated the general register of each pitch event, with a stated accidental (consisting of naturals and sharps). The reason for imposing specific accidentals on the pitch events is unclear, however, it can be viewed as providing the performer with direction that can aid in the overall performance. Along with accidentals, the

dynamic and force of attack of a note is meticulously detailed. Brown's use of compositional limitations can be viewed as an attempt to apply a structural, sonic and motivic cohesion in order to achieve a sense of uniformity between the unordered 25 pages.

There are numerous points in which pitch events approximating vertical chords become "impossible" (Brown, 1975) to play exactly as written in the score. Brown notes that extreme vertical chords can be arpeggiated in numerous ways; "from top to bottom, bottom to top, from the center outward or from the outward extremes to the center" (Brown, 1975).

Brown proclaims that the 'mobile' elements of *Twentyfive Pages* lie in the "page sequence and inversion, clef disposition and time" (Brown 1975) as an attempt to clarify its potential, however, it is observable, as Lesser states, that the number of possible realisations that do exist and can exist of this piece will be "astronomically" (Lesser, 2007, P. 479) high.

The application of mobile forms took on different shapes between the composers of America and those of Europe, with American composers observing a relatively relaxed approach to music making and Europeans furthering the centuries-old tradition of detail and comprehension. This complexity is exemplified through the work of Karlheinz Stockhausen.

Karlheinz Stockhausen

Stockhausen's *Klavierstück XI*, of 1955-56, consists of a large single sheet of paper with 19 fragments of music placed around the page. On first observation, it is immediately discernible as to how complex the fragments of music are.

Figure 12

Two fragments from Klavierstück XI

Note. From *nr 7 Klavierstück XI*, by K. Stockhausen, 2011, Universal Edition.

Stockhausen's performance instructions, on the other hand, are clear and decisive. The performer is to choose any "group" (Stockhausen, 2011) on the page and to apply tempi, dynamic level and a type of attack. Once that group has been interpreted, the performer must read and understand a set of instructions provided at the end of every group; these instructions guide the performer with specific tempi, dynamics and types of attack to apply to the next group of music that may be chosen. These are the primary instructions for how the performer can begin a performance of the piece. As a performance progresses, the performer might find themselves repeating groups of music, Stockhausen accounts for this possibility by placing unique instructions upon many of the groups that will only apply on a second iteration of that

particular group; instructions such as playing a bar of music an octave or two lower or higher than first played.

A performance of *Klavierstück XI* is to end when a particular group has been arrived at for the third time, when achieved “one possible realisation of the piece is completed” (Stockhausen, 2011). Stockhausen encourages at least two performances of the piece in a single programme (Stockhausen, 2011) in order for the audience to hear the full range of musical groups. Stockhausen accounts for the possibility that certain groups may only be played once or not at all in a single performance. He does not make a statement to instruct that all groups must be played or even a certain method that when employed enables all groups to be played. On the contrary, the lack of instruction regarding this displays Stockhausen’s understanding and acknowledgement of the many outcomes and possibilities that can arise from the performance of open form compositions.

Klavierstück XI is consistent with Stockhausen’s wider body of works, therefore it can be gathered that Stockhausen decided to fit his particular aesthetic of music within the concept of musical mobility, opting not to follow a more indeterminate pathway.

Complex rhythmic figures, elaborate chords and meticulous instruction feature heavily. To achieve this, Stockhausen made use of serial techniques (as shown in Figure 13 below) in order to determine elements such as pitch and rhythm that were to be used in constructing each musical group.

Figure 13

Klavierstück XI rhythm matrix 1

Note. From “The Translation of Rhythm into Pitch in Stockhausen's Klavierstück XI,” by S. Truelove, 1998, *Perspectives of New Music*, *36*(1), 192 (https://doi.org/10.2307/833580)

It is noticeable from listening to recordings and observing the score, that there is a pronounced disjointedness between the complex, full texture of the music and the silence or waiting that proceeds between groups. Stockhausen programs this into the piece, in some part, by instructing the performer: If a group ends with a pause-sign, the performer must wait the duration of said pause before reading the instructions that are to be imposed on the following group, “all of which produces a longer rest than after a group without a final pause sign” (Stockhausen, 2011).

A prospective performer will have to dedicate a considerable amount of time to the rigorous learning of all music presented on the single sheet of paper before a performance can take place. This presents a different challenge compared to that of the works by Brown and Feldman: A performer could interpret *Twentyfive Pages* or *Intermission VI* in a more improvisatory manner than that of *Klavierstück XI*. Stockhausen notes that this type of music

“demands an interpreter who is close to sound and silence, who is open enough - unpredictable and co-creative - in giving a work form” (Stockhausen, 2011).

John Cage produced a scathing review of *Klavierstück XI* as part of a series of lectures and writings on indeterminacy:

> The indeterminate aspects of the composition of the *Klavierstück XI* do not remove the work in its performance from the body of European musical conventions. And yet the purpose of the indeterminacy would seem to be to bring about an unforeseen situation. In the case of *Klavierstück XI*, the use of indeterminacy is in this sense unnecessary since it is ineffective. The work might as well have been written in all of its aspects determinately (Cage, 1961, P. 36)

Cage summarises that the work cannot be portrayed as definitely mobile from a performance perspective because of Stockhausen’s reliability on two key features of European music, twelve tones of the octave and prescribed regularity of rhythm. To Cage, the insistence on established practices effectively ensnares the performer into a conscious or sub-conscious continuation of the European musical tradition, which it seems Cage believes is antithetical to indeterminacy, by influencing the performer’s choices on how to construct the work’s structural elements.

Kazimierz Serocki

Kazimierz Serocki imposed relatively strict rules upon the interpreters of his mobile music. Serocki composed three mobile works that are characterised more accurately as open form: *a piacere*, *Arrangements* and *Ad Libitum*. In *a piacere* (1963) for piano and *Ad Libitum* (1977) for orchestra, Serocki urges the performers that all pages and subsequent musical events be played in a single performance; how and when the pages and events are played within the performance is left to the performer/s. Serocki took a different approach with *Arrangements* (1976) for one to four recorders. Serocki devised a table of possible combinations of pages (segments), similar to the method Henry Cowell developed, that could be performed within a single performance (see Figure 14). These combinations were compiled within all of the possible configurations (variants) of a quartet of recorders.

Figure 14

Serocki's table of segment combinations in Arrangements

Note. From *Arrangements*, by K. Serocki, 1998, Polskie Wydawnictwo Muzyczne.

Once a variant of the ensemble is picked, the performer/s must play all of the segments stated in the respective variant's column. The order of how the segments are played is left to the wishes of the performer/s.

Serocki approached open form composition to create new distinctions and new ways of composing within the concept of open form. He describes *a piacere* as having an "open comprehensive form" (serocki.polmic, 2012). "Open – because the performer can shape its progression as he or she wishes. Comprehensive – because it is based on a complete

utilisation of a specific, basic sound material (none of the structures can be omitted or repeated)" (serocki.polmic, 2012).

Serocki developed criteria for how he could write specific music events: typically arranging these musical events into groups defined by characteristics such as tempo, expression, and registral similarities. This is demonstrated in his solo piano piece, *a piacere*, comprising three pages (sections/ segments), with each page containing ten musical events (structures).

Figure 15

Section 1 of Serocki's a piacere

Note. From *A Piacere*, by K. Serocki, 1999, Polskie Wydawnictwo Muzyczne.

The presentation of structures dispersed on each segment is reminiscent of Stockhausen's *Klavierstück XI*. This however is the only similarity to Stockhausen. Each structure contains a value of time (in seconds) for the respective structure to be performed within. According to

Serocki, however, these time constraints are only approximate and relative (Serocki, 1999), much like the relative durations in Brown's *Twentyfive Pages*. Serocki indicates that a single performance of this piece must not last less than six or more than eight minutes. This displays the methods Serocki employed to achieve an open form piece not based around chance, like that of Brown or Stockhausen, but in constraining the near-unlimited possibilities created by indeterminate composition.

Serocki encourages the performer to not only memorise the music of each structure, but to understand the various expressive connotations and musical characters (serocki.polmic, 2012) presented in each structure and the sum of structures and sections. This allows the performer to construct a meta-narrative of expressional qualities to present to the audience of that particular performance. This is made straightforward with the PWM Edition of the *a piacere* score, which allows the performer to display all three pages in a way that ensures they are all in view whilst on the music stand.

> Yet in this case freedom to choose the order of playing the "structures" and "segments" does not signify chance; the performer needs to think over the structural and dramatic concept of the whole work and then to proceed as he or she likes (serocki.polmic, 2012)

Performance interpretations

> Among the special features of musical experience, creative listening emerges as a key factor, not only in the invention and presentation of music, but also in the concert-goer's or record-listener's appreciation … The listener participates ('if I could have made this music, this is exactly how it would be') and the experience becomes an adventure which provides both a sense of self-sufficiency and the recognition of a driving force beyond us. It is as though we had projected into the music something of ourselves which now has a life of its own. We can aspire to the artifice of art; to its completeness and to its inner logic (Paynter, 1992, P. 12)

The fascination with mobile music stems from the outcomes of its performance, with the composer being able to experience the result of a performer's constructive methods, and the listener being able to experience one of the many variants that could arise from the music's interpretation.

Mobile music presents the performer with an engaging dilemma: the consideration of what is, or if there is, a 'correct' or more 'appropriate' method of constructing a piece of music for the purposes of interpretation. Through hundreds of years of cultural tradition – the expectation of performers serving the composer as if they were a master, and to remain faithful to splotches on a piece of paper – it is only natural that a performer would look to the composer for guidance on how they should go about engaging with the composer's work.

From a performance perspective, there are two methods of constructing mobile music with the outcome of performing the work. A performer can construct the mobile elements prior to the performance and use this as a plan during the performance. In doing this, the performer removes any element of improvisation, this by no means implies that the main reason for the existence of mobile music is improvisation. It can, however, be noted that many composers of mobile music see their work as a vehicle to encourage and to advance improvisation within

the field of composed music (outside of the exploits of other genres of music such as jazz and traditional folk musics).

There are compositions that necessitate preparation, such as Mozart's *Musikalisches Würfelspiel*. In some cases, performers have themselves constructed a physical plan for the performance of a piece. Pierre-Laurent Aimard's performances of Stockhausen's *Klavierstück XI* shows him performing not from the large sheet of paper provided as the main score, but rather in a 'cut-and-stick', reduced score placing each musical event in the order of how they will be performed, arguably reducing the composition to a simple 'run-of-the-mill', European-style composition. Constructing a plan does however prove beneficial in achieving a connected, contiguous sound, removing any disjointedness in the chain of musical events while eluding the audience of its original, deconstructed nature.

The second method a performer can choose is the construction of the music's elements during the performance in an improvisatory, in-the-moment manner. This seems to be the expected method by many musicologists and composers, as seen in a quote from John Welsh "musical elements or events which are assembled, ordered, and combined by the players or conductors during the performance" (Welsh, 1994, P. 256). Composers can choose to design their music with this method as a foundation in which to create the composition: Earle Brown's *Available Forms I* and *Available Forms II*, along with *Module I* and *Module II* are examples of music that is designed through consideration for the performers and how they realise the music.

Uitti remarked on the reluctance of John Cage to approve of improvisation within his own music and contrasted this with Brown's enthusiasm towards performers using improvisation methods to achieve realisation of his music (Uitti, 2007, P. 334).

When performing Stockhausen's *Klavierstück XI,* Prodromos Symeonidis opts for an approach contrast to Aimard's own performance of *Klavierstück XI*. Symeonidis performs the work as

was intended, using the large main score, and picks which musical events to perform and when to perform them.

> Stockhausen's *Klavierstück XI* is the only piece mentioned where the performer is required to make rapid, structurally significant 'on the spot' decisions, and to modify later stages of the performance in the light of those initial decisions. Scores such as those by Brown or Boulez expect the performer to consider a number of possible alternatives prior to the performance, and then to realise the work from the vantage point of the decisions taken (Lesser, 2007, P. 477)

Regardless of which method a performer takes to achieve the realisation of a mobile work, they must contend with another dilemma in the journey of realising mobile music, the recognition of the reliance on their own personal biases. This can either be acknowledged and accepted as a fundamental precondition or can be (or attempt to be) subverted in the pursuit of objectivity. David Tudor took the latter approach, to be objective in a work's performance insisting on precise calculations of elements such as dynamics and their relation to each other, metric rigour, and the uniformity of all performances of a piece of music.

John Cage remarks on this consideration with regards to works of indeterminacy in his lectures, "He must perform his function of giving form to the music in a way which is not consciously organized" (Cage, 1961, P. 35). This can be through: arbitrary choice of what musical element to pick and when; "feeling his way" (Cage, 1961, P. 35) as if the performer was following the expressive narrative arising from their own performance, this can also be seen as following the dictates of the subconscious mind, revealing an inner primal drive; accepting one's own biases, this may be through consideration of what musical element sounds better, what musical element is easier or harder to play, and other such analyses.

Cage makes the following deduction of how an indeterminate composition results in an indeterminate performance, "To ensure indeterminacy with respect to its performance, a composition must be determinate of itself. If this indeterminacy is to have a non-dualistic

nature, each element of the notation must have a single interpretation rather than a plurality of interpretations which, coming from a single source, fall into relation" (Cage, 1961, P. 38).

Performances of Intermission VI

An analysis of recordings, as well as consultation of the main score of Morton Feldman's *Intermission VI* provides insight on performance considerations. In Figure 16 below, I have labelled each sonic event (numbers one to 15). The characters in red found above the event indicate the number of times that particular event has been played in a specific recording of the piece, totalling nine minutes and nine seconds, by Steffen Schleiermacher.

Figure 16

Annotation of events in Intermission VI

Note. From *Solo Piano Works 1950-64*, (p. 5), by M. Feldman, 1998, C.F. Peters.

As can be seen in Figure 16, Schleiermacher elects to perform the majority of events multiple times, although opting to disregard entirely event number six. It is unclear as to why

Schleiermacher's interpretation omits this certain event, however, such can be the outcome from the sense of freedom afforded to a performer of mobile compositions. Feldman does not provide much help for the performer of *Intermission VI* providing only vague performance instruction in order to instil some sense of procedure of how to undertake an interpretation. The music and the concept it portrays is uncomplicated and simply laid out for a musician, further regulation and more complex instructions would create an unnecessary process of comprehension that would not befit music of such undemanding presentation. This being said, once a musician examines the finer details, it opens questions of the very nature of interpretation, and challenges the internalised notions all musicians learn when performing music.

James Pritchett, noted for his extensive writings on the music of John Cage, remarked in a blog post about his approach to interpreting *Intermission VI*, "In playing this piece, a couple of questions appeared pretty quickly: Can you repeat any of the sounds? And how long the piece should go on?" (Pritchett, 2010). He then proceeds to detail how he interprets the music, asking questions on specifics such as, how the notation of rests works, how does silence separate each music event.

Pritchett admits to how he chooses what event to play, his method is detailed exactly in John Cage's lectures, as mentioned in *Silence: lectures and writings by John Cage*. One method undertaken by Pritchett is to feel his way from sound to sound, the same method documented by Cage (Cage, 1961, P. 35). Pritchett describes that feeling his way through the sound involves glancing at a random event on the page, playing the event and waiting for the sound to decay – as is specified by Feldman in the instructions – whilst simultaneously looking away from the page. Once the sound has disappeared, he glances again randomly at the page and plays the corresponding event.

Pritchett muses on the differences between interpreting *Intermission VI* for solo piano, and interpreting for two pianos. With a solo piano, the musician is free to proceed how they wish under the limited guidelines set by Feldman. Whereas, for two pianos, particularly two pianists performing together live, the question of how an ensemble performs together is questioned.

In a series of recordings for two pianos by Kristine Scholz and Mats Persson, *Intermission VI* is performed four separate times. Although each recording is completely different in terms of the order of material played, several motifs can be heard consistently across the four different interpretations. Scholz and Persson elect to add emphases on events five[1] and seven, this adds a level of cohesion and uniformity not seemingly present in other interpretations. It is possible that the order of events was prepared beforehand to ensure a certain consistency of form and motif, and to encourage union between the ensemble of two separate individuals.

[1] Upon listening to ten different recordings of *Intermission VI*, it is interesting to note a certain gravitation towards musical event five (in Figure 16) across all ten recordings.

Christopher Fox's *senza misura*

A more recent example of a mobile composition and its performance is Christopher Fox's *senza misura* for solo piano. This piece presents to the performer the opportunity to decide structural elements and the interpretation of degrees of attack for each chord.

Figure 17

Page 1 of Fox's senza misura

Note. From *senza misura*, by C. Fox, 2017, THE FOX EDITION.

In the UK premiere performance of *senza misura*, the performer, Philip Thomas, opted to present the 27 independent sections of the work over the course of five days. Thomas combined a varying number of sections, per performance, so that each section was not repeated, but all 27 sections were presented. This meant that the durations of performances varied; the shortest concert being nine minutes, and the longest being 55 minutes. Much like Aimard's approach to Stockhausen's *Klavierstück XI*, Thomas organised the number of lines that were to be played in each performance and designed a physical plan for the order of which lines were to be performed and when.

Earle Brown's *December 1952*

In a concert of works based around improvisation, the Contakt ensemble performed a seminal work of Earle Brown's, *December 1952*. Although this work is not one of Brown's open form works, it is an example of a mobile form through its indeterminate graphic score. The score presents a geometrically abstract set of symbols intended to invoke a musical reaction from the performer. For this concert, each member of the Contakt ensemble had circled selected areas of the *December 1952* score and were assigned an area of score to interpret, this comprised the musical direction of the performance. Each member would interpret the symbols within their respective areas without any acknowledgement of what other members were playing, similar to how Percy Grainger envisioned an ensemble's performance of his work *Random Round*. The Contakt ensemble envisioned each sonic event progressing through the temporal space in a metaphorical homage to Calder's Mobiles (Edwards, 2019).

Original composition

Using the research and analysis undertaken into the developments of mobile music, an original composition has been created named *Doux Languissant*.

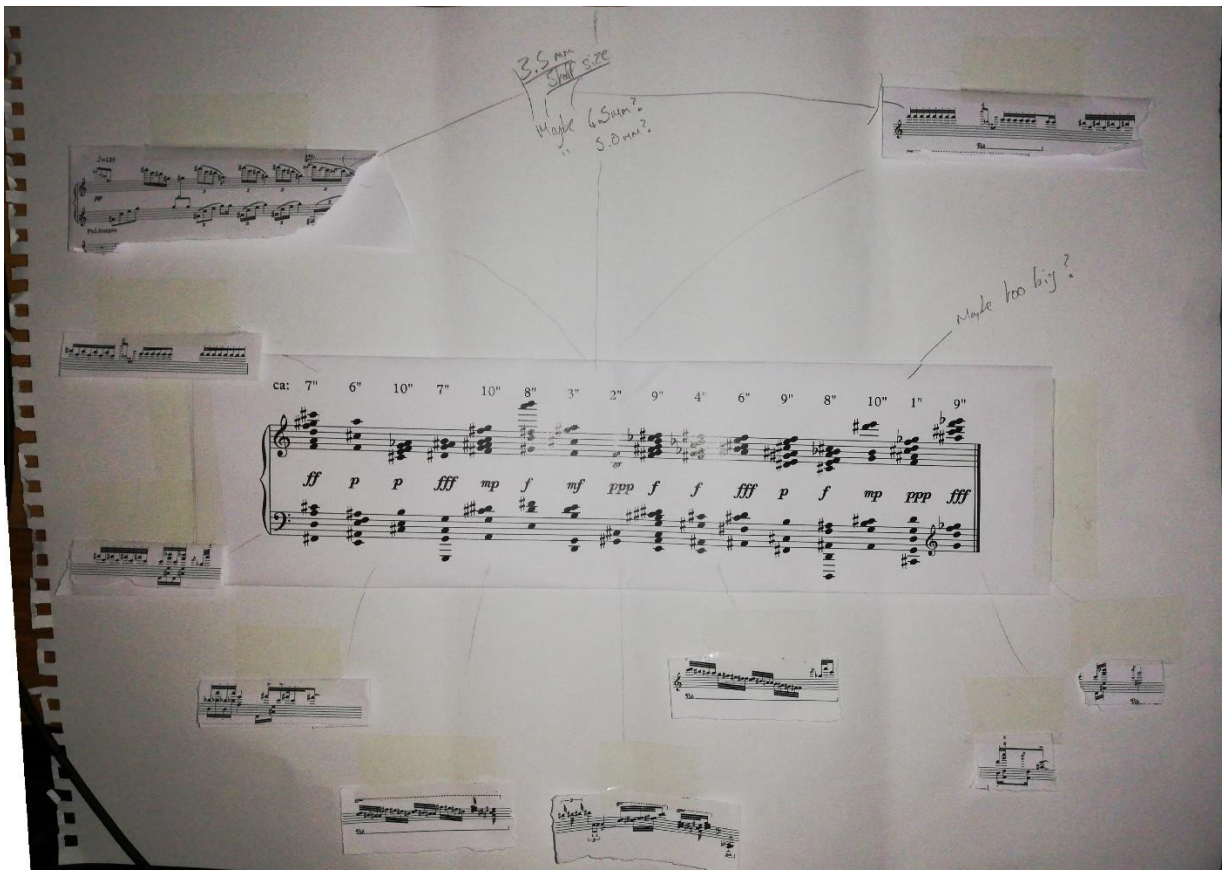
The composition has been reworked and reframed many times during the entire process, taking inspiration from many works ranging from mobile music as seen in this research, to music that is not relatable to mobility.

The first consideration for this composition was the structural mobility: how music can be grouped into structures or segments for a performer to arrange according to their will.

For a large period of time, *Doux Languissant* took on a visual form similar to that of Stockhausen's *Klavierstück XI*. Presented on a sheet of A3 paper, a line of block chords occupied the centre of the sheet of paper, whilst surrounded by small figures, which were called events, of music arranged to resemble a mobile sculpture of Calder's.

Figure 18

First draft of Doux Languissant



The idea that has pervaded throughout the progression of *Doux Languissant*, giving basis for the generation of music, has always been the use of music by Alexander Scriabin.

Scriabin's *Piano Sonata No.8* of 1913 was chosen as the source of pitch qualities, particularly for its harmonic qualities derived from whole tone and octatonic scales. The title *Doux Languissant* is influenced by an expression marking on page 31 of the Sonata's score.

With a source chosen, different approaches to extracting pitch material were used. A primary method was the utilisation of chance operations in the process of collecting specific pitch material. A random number generator was used to determine which page number, and subsequently, which bar number was to be selected. Once this was completed, every single pitch, including repeated notes in different registers, was extracted and placed into a block chord, as can be seen in Figure 19 below. For greater detail on this method, see Appendix 2.

The random number generator was used also to select dynamics and approximate time durations from an arbitrary set provided by the composer, to be applied to the progression of chords. The use of dynamics and durations was deemed necessary to focus the performer into a particular direction which stimulated the interpretive act. It can be discouraging for a performer if the music has no set guidelines and can lead to a performance becoming distracted or uninspired.

Figure 19

Collection of pitch material, time durations and dynamics using a random number generator that formed an early draft of Doux Languissant

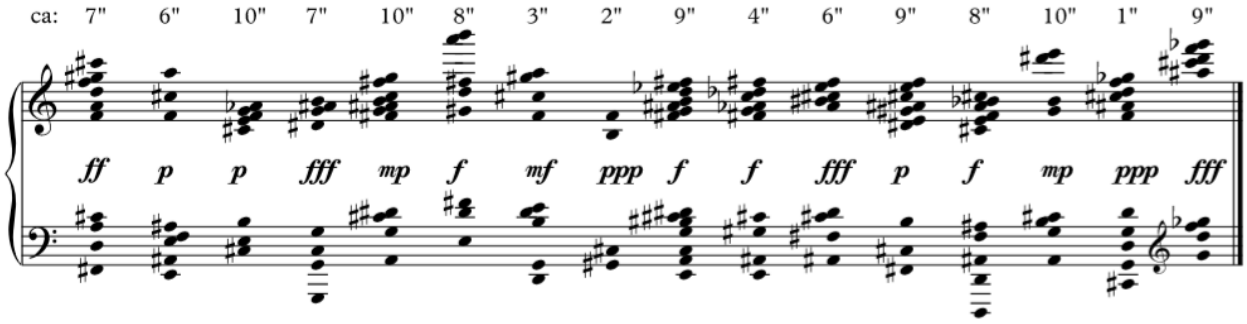
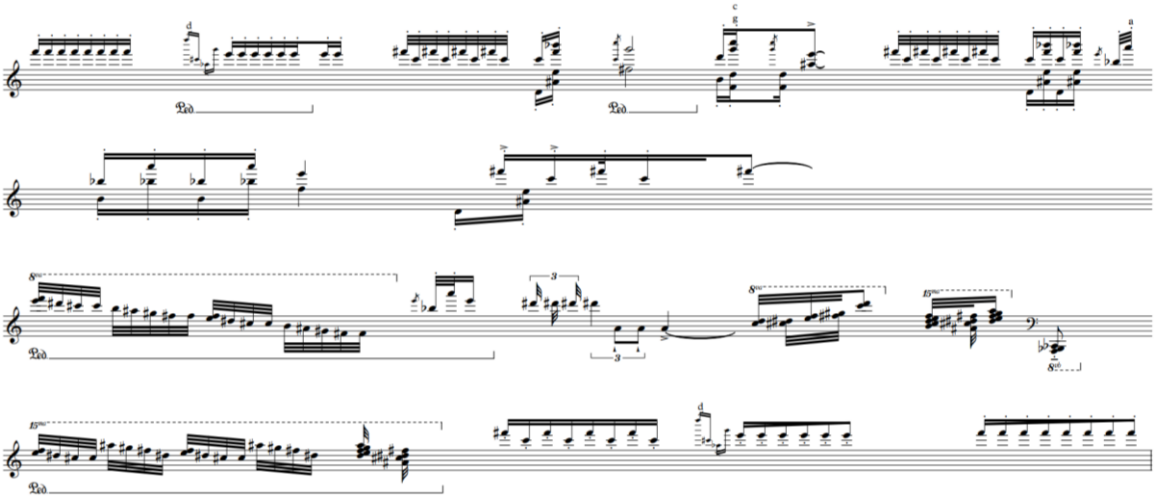


Figure 20

Collection of musical events



Whilst the chord sequence was created through chance operations, the individual events of music were created in a more traditional manner using a piano. The characteristics of these events are inspired by Olivier Messiaen's music, particularly his notation of bird song.

Piano was the intended instrument for which to write the music of *Doux Languissant*. The piano was considered because of its enormous wealth of musical capabilities and its sonic character. Piano is, as well, the instrument which Scriabin wrote his eighth Sonata for, so *Doux Languissant* could be experienced as an extension of, or a homage to Scriabin's eighth Sonata.

Setbacks arose when formulating how the music should actually be played. The idea that underpinned this iteration of composition was that the line of chords in the centre of the page be played in a linear and traditional fashion, playing from left to right, and the events of music around the page be played in any order, and as many times as the performer wished. All the while following the approximate time durations assigned to each of the block chords. The set up of this composition complicated the more detailed analysis of how the composition should be played, such as: whether to keep the chord sounding, using the sustain pedal, whilst playing the events, leading to a blurred sound; would there need to be more events, or more complex events to create an appealing piece of music to play and listen to.

This version of *Doux Languissant* was dispensed with in favour of a simpler and more focussed format with which to create the composition. Not only was the format of the composition changed, but the instrumentation was also revised, switching from piano to guitar.

The guitar, more specifically the nylon string 'classical' guitar, is a versatile instrument, underused in comparison to other polyphonic instruments. It allows for unique timbral qualities, delicate tones and a range of extended techniques to diversify its sonic output.

The guitar has been chosen for many reasons, but specifically for its practicality. A guitar is compact in size and makes transporting it more convenient, this enables *Doux Languissant* to

be accessible to a guitar player whenever and wherever necessary. This convenience would not exist if the music had been produced solely for a larger instrument, such as the piano.

Another benefit to writing the music for guitar is the ability for *Doux Languissant* to be performed by a solo player, or as part of a guitar ensemble, similar to Brown's *Twentyfive Pages* which can be performed by one solo pianist, or up to 25 pianists, allowing flexibility of performance outcomes. The first official version of *Doux Languissant* reinforces flexibility of interpretations, stating that the piece can be played by one solo player, or by an unspecified number of ensemble members. Finally, writing for a specific instrument creates workable constraints, this is to limit innumerable instrumental capabilities that can be utilised when writing music for 'real' instruments.

The concept of this composition emerged from teleological reasoning: *Doux Languissant* aims to provide the performer material to construct to their wishes, forming the structure of the composition, at the moment of its performance. This level of flexibility, however, was not to be extended to actual pitch content, rather, opting for definite pitch to achieve a specific sound world. As has been the foundation of the composition of *Doux Languissant*, the aim was to reproduce a sound world characteristic of Alexander Scriabin, and more broadly, incorporating sonic styles related to music examining mystical subjects, taking influence from composers such as Ruth Crawford Seeger, Sergei Protopopov, Dane Rudhyar and Olivier Messiaen. This provides the music with an identity.

Identity is the key aspect in the conception of *Doux Languissant*, electing to create musical content that can be memorable for its sound world, as opposed to the practice of improvisation. Such can be seen in Brown's *Twentyfive Pages* with its use of random pitches created at the time of performance.

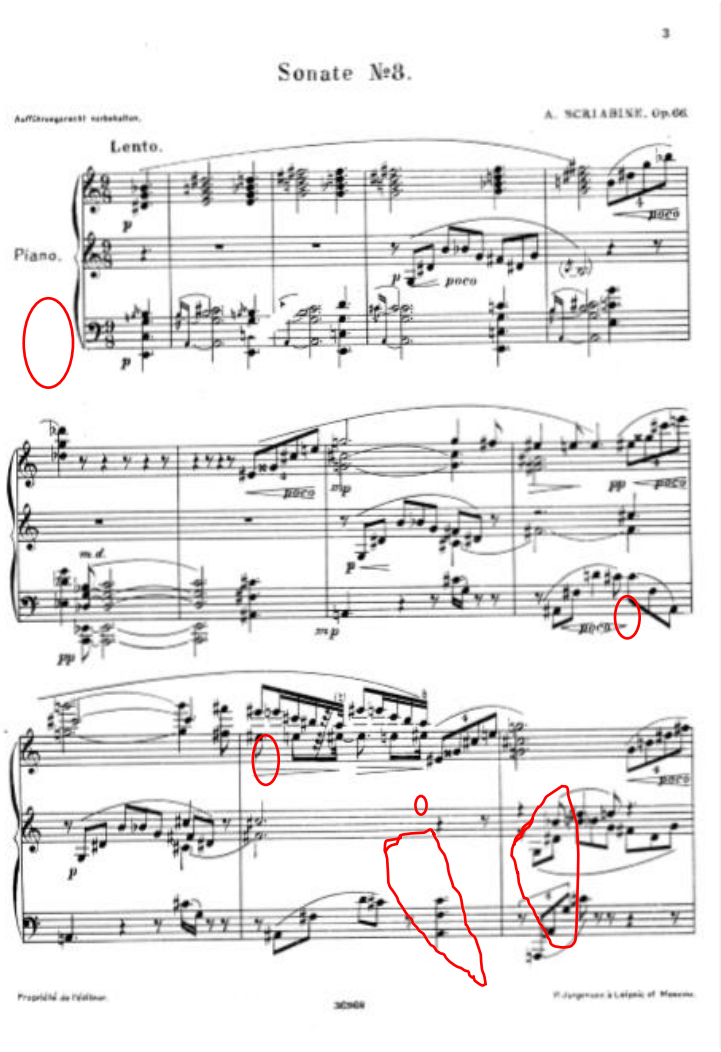
Ideas for *Doux Languissant* have existed in many different formats and configurations, including music for solo piano and electronics, to piano and ensemble of monophonic instruments. Before arriving at the choice of guitar, *Doux Languissant* was written to be for

non-specific instrumental forces, taking a similar approach to Cowell's considerations of his own works. "Cowell mused for Grainger's benefit that composers were too "fussy" about the instrumentation of their work" (Robinson, 2011, P. 301). This quote provided the basis of *Doux Languissant*: to afford potential performer/s the opportunities to decide upon instrumental forces to interpret the written music. This design proved unworkable in practice: it demonstrated the impossibility of considering all instruments and all of their capabilities. For instance, if a line of music were to be written in bass clef, this would exclude automatically any instrument incapable of achieving notes in that range. Another example is determining which instrumental techniques to be used: techniques available to most instruments (tremolo, harmonics, slurring), and techniques limited only to certain instruments (multiphonics for wind instruments, bowing techniques for string instruments). These deliberations proved overwhelming and no progress could be achieved on this design. It was, therefore, necessary to decide on a specific instrument to write for in order to allow progression in writing the music of *Doux Languissant*.

This version of *Doux Languissant* employs a different method of pitch selection, but still works similarly with chance operations. Pitch material was still to be selected from Scriabin's *Piano Sonata No.8*, but rather than using a random number generator to select pitches, a number of Calder's mobile sculptures have been superimposed on top of the score for Scriabin's sonata. Using the common analysis of Calder mobiles, the 'bodies' of a mobile were identified, traced around in red outline, and applied onto the sonata score.

Figure 21

Scriabin's Piano Sonata No.8 score with 'bodies' of Calder's Mobile (1932) imposed upon the score

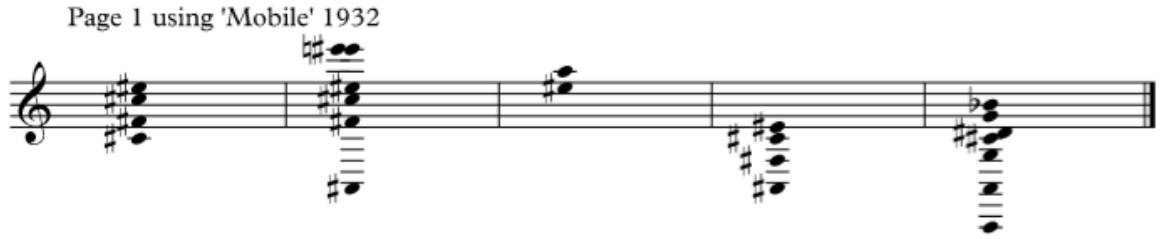


Note. From *Sonate No.8*, A. Scriabin, 1913, P. Jurgenson.

Whatever music fell within and directly above and below the field of the red outlines was to be extracted. A great deal of liberty and creative freedom was applied to determine pitch material with the goal of extracting as much material as possible. The areas in red act as anchor points, and pitches, above and below the marked areas within the respective systems, are extracted, culminating in a collection of pitches that can be manipulated according to the tastes of the composer.

Figure 22

Summation No.1 of pitches taken from each area of Sonata 8 marked in red



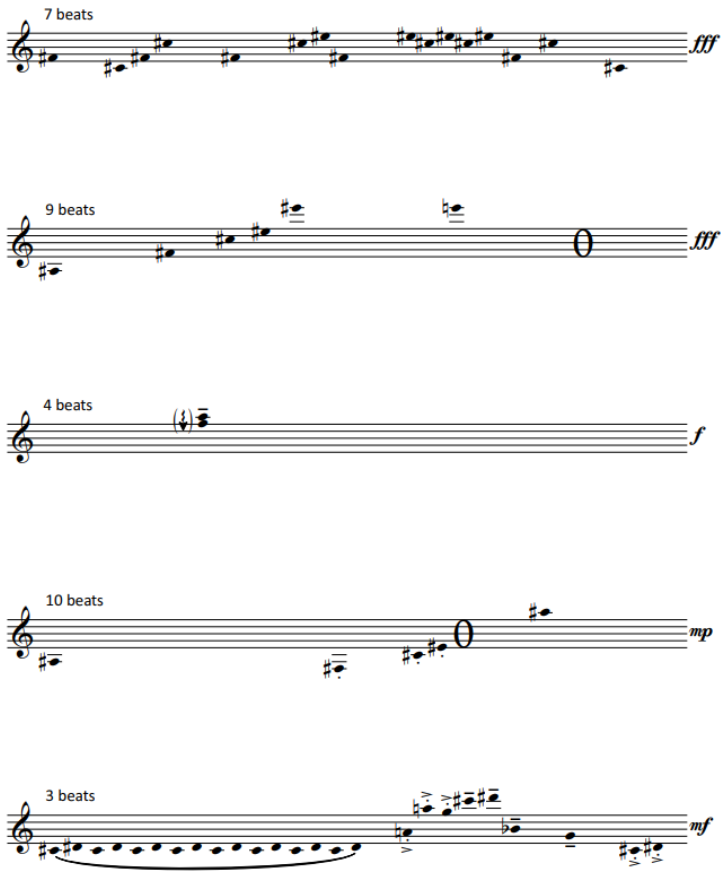
With the pitch qualities decided, the decision was made to create a composite scale of these pitches in order for them to be used in different registers/ octaves as opposed to only existing within the register seen in the Scriabin sonata.

With pitch content generated, short lines of music were created. These lines have been termed “events”. The purpose of naming this element of structure is to support the performer in the understanding of how the construction of this piece develops. This idea was directly influenced by the work of Serocki.

From the musical information collected to form Figure 22, each bar (in Figure 22) was transformed into an individual event. Each event includes only the pitches specified from that bar (See Figure 23).

Figure 23

Page of events from Doux Languissant



Many propositions for the extent of musical mobility have been experimented with, ranging from designs similar to Stockhausen's *Klavierstück XI* and Serocki's *a piacere*. The influence for visual design arose from the research of Feldman's *Intermission VI* and Brown's *Twentyfive Pages*, including the use of Alexander Calder's mobile sculptures. The final design presents to the performer a number of single line staves (events), reading from left to right, with the performer choosing the order in which these events are played.

Traditional rhythmic notation has been dispensed with in favour of a concept known as approximate notation. A technique pioneered by Earle Brown; the temporal duration of a pitch is surmised from its spacial qualities visualised on the score. With regards to *Doux Languissant*, the relative distance between notes indicates the approximate duration of each note: a bigger distance between notes indicates a longer duration; shorter distances between

notes implies a quicker duration. This concept allows the performer to improvise the realisation of note durations.

Using the music template of Figure 19, time durations and dynamic markings are extracted using a random number generator. The resultant durations and dynamics are applied to each musical event. This imposes a level of regulation on the performer which in turn ignites a level of interest in each musical event. Stockhausen's *Klavierstück XI* offers inspiration for providing dynamic markings at the end of each musical event, in which the performer will apply these markings to the following musical event. Performers have an approximate length of time to complete each event within.

An idea that was used early on for this version of *Doux Languissant* stated that each event was to be counted in seconds: this would rely on the performers keeping rough count in their heads, which would most likely prove difficult in reality. Another method considered was to provide the performers with a counter, counting in seconds, showing the amount of time taken from the beginning of the piece, giving the performer an idea for how long an event should last relative to that timer: a timer shown on a screen, visible to all members of the ensemble. This would rely on the performer being able to calculate how much time their event should last relative to the number of seconds shown on the timer, which, during a performance, having to interpret the musical symbols on a page and having to calculate time simultaneously, would also prove difficult, if not impossible. An alternative and more convincing method is the use of a counter that beats a pulse of a given tempo of beats per minute. In the case of *Doux Languissant*, the tempo is 70 beats per minute. This tempo reading was chosen as it is the approximate tempo of a performance recording of Scriabin's Piano Sonata no.8 given by Marc-André Hamelin. If *Doux Languissant* is performed by an ensemble, the ensemble have the option to elect conductor or leader to aid in keeping as close to the 70 bpm tempo as possible.

The original plan for the ensemble version of *Doux Languissant* was for entire ensemble to have only one full score, so that the pages could be divided up between each player, restricting them to the musical material on their respective pages. This plan was altered so that each

player could utilise a full score of their own, allowing them to select their material from the full source, and to enable flexible performance lengths. This change ensures that each performer can choose to interpret events in a unique way relative to other ensemble members.

The score for *Doux Languissant* consists of eight pages that are not numbered. Confirming to the performer that there is no standardised method of organising the individual pages, rather allowing the performer to arrange pages into any order. This contributes to the mobility of structure. A potential issue that may arise for performers is a question of how practical it is to display the eight pages so that each page is on show to provide the performer with the full musical content for them to select from. Depending on the individual circumstances for the performer, it may be possible to display all eight pages at once, utilising a number of sheet music stands or other methods of presenting the pages. If only one sheet music stand is available, it is permissible for the performer to display only two or three pages at a time, thus still allowing for a wealth of ‘events’ to be chosen.

It is preferable for the performer to have multiple pages, if not all eight, on display so that the entire musical content is available to choose from. The performer has the freedom to choose how many pages they want to interpret in a single performance, ranging from playing just one page to all eight pages. There are restrictions on the performer so that there is an element of structure imposed on the interpretive activity: whatever pages are chosen to be played, every ‘event’ on that page must be played at some point during the performance.

Doux Languissant has been designed to offer an introduction into mobile forms, taking influence from existing compositions that have advanced the capabilities of mobility within music. A future version of *Doux Languissant* is planned, a composition that will require differing instrumental forces and feature a wider variety of mobile music elements.

Original Composition Score

This composition score does not contain page numbers, therefore, will not alter the page numbering of this thesis.

Follow the link below to access the recording of *Doux Languissant*.

Link: https://soundcloud.com/mrmarkysparky11/doux-languissant/s-4pu8UjCiNJw

M.Thacker

Doux Languissant

A Mobile Form Composition

For Guitar

Solo or Group

Performance Notes

Music for solo guitar or unspecified number of guitars.

Score consists of a number of unordered pages. Pages can be arranged in any order according to the wishes of the performer/s.

Each page contains a number of ‘events’.

‘Events’ can be played in any order of the performer’s choosing.

The very first ‘event’ of the performance chosen by a performer is to be played at a medium (not too loud, not too quiet) dynamic.

A tempo marking of **70** beats per minute is set. This tempo will continue up to the completion of the composition.

The performer/s must keep count of this tempo in any way they deem optimal, for example: use of a physical metronome, a metronome application on mobile phone, etc.

If performed as part of an ensemble, a conductor/ leader can be assigned to keep tempo.

Each ‘event’ is assigned a number of beats indicating how long the ‘event’ should last for.

Performers can complete the ‘event’ as quickly or as slowly as they please, provided it is within the ‘event’s’ allotted time duration.

The rhythm or duration of individual notes within an ‘event’ is in relative approximation and is at the will of the performer in consideration of the total time allotted to the ‘event’.

Pitches with no accidental attached are to be considered ‘natural’, and any accidental attached to a pitch will apply only in that instance.

At the very end of each ‘event’, a dynamic marking is specified: this is the dynamic that must be applied to whichever ‘event’ is chosen to be performed next.

This symbol O signifies a break in the sound.

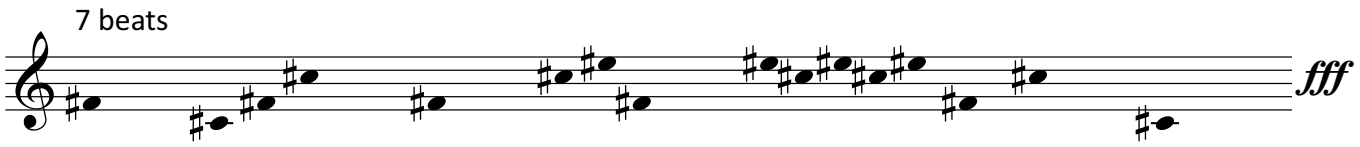
The performer can choose how they transition from one ‘event’ to another, whether that be a seamless, quick transition, or a break in sound, allowing for silence. If the performer opts for a break in sound, a maximum of 8 beats should be counted between the two ‘events’.

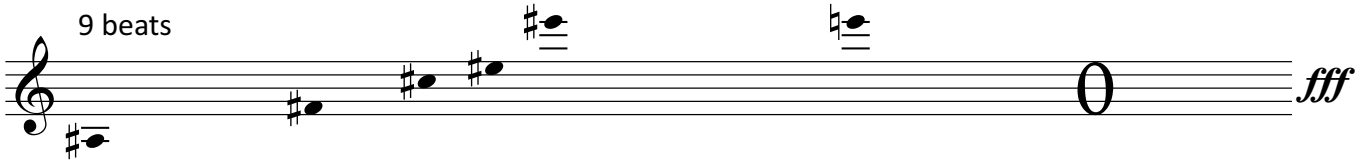
The performance must start with only one performer playing an ‘event’. I insist that the decision of who begins the performance happen organically during the performance, not by conversation but by a communal, performative instinct.

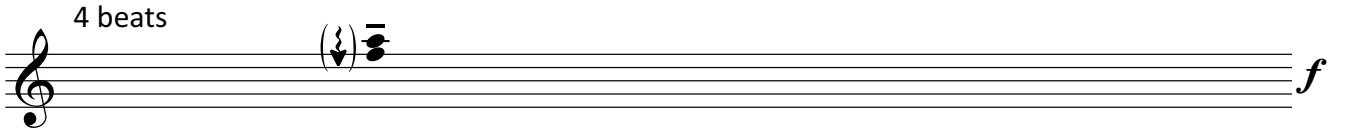
After this, the whole ensemble is free to play their respective music whenever they choose during the duration of the entire performance.

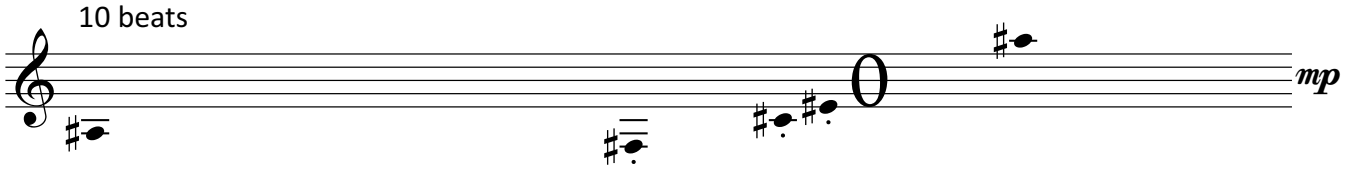
Any number of pages can be performed, providing every ‘event’ on the selected number of pages is performed.

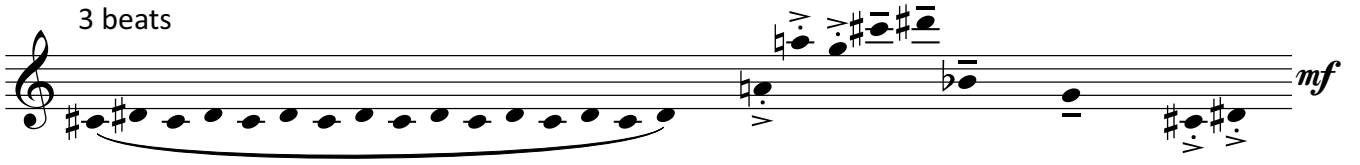
The performer must finish their performance once they arrive at an ‘event’ for the eighth time. (Performers should not feel like they have to finish all at the same time).

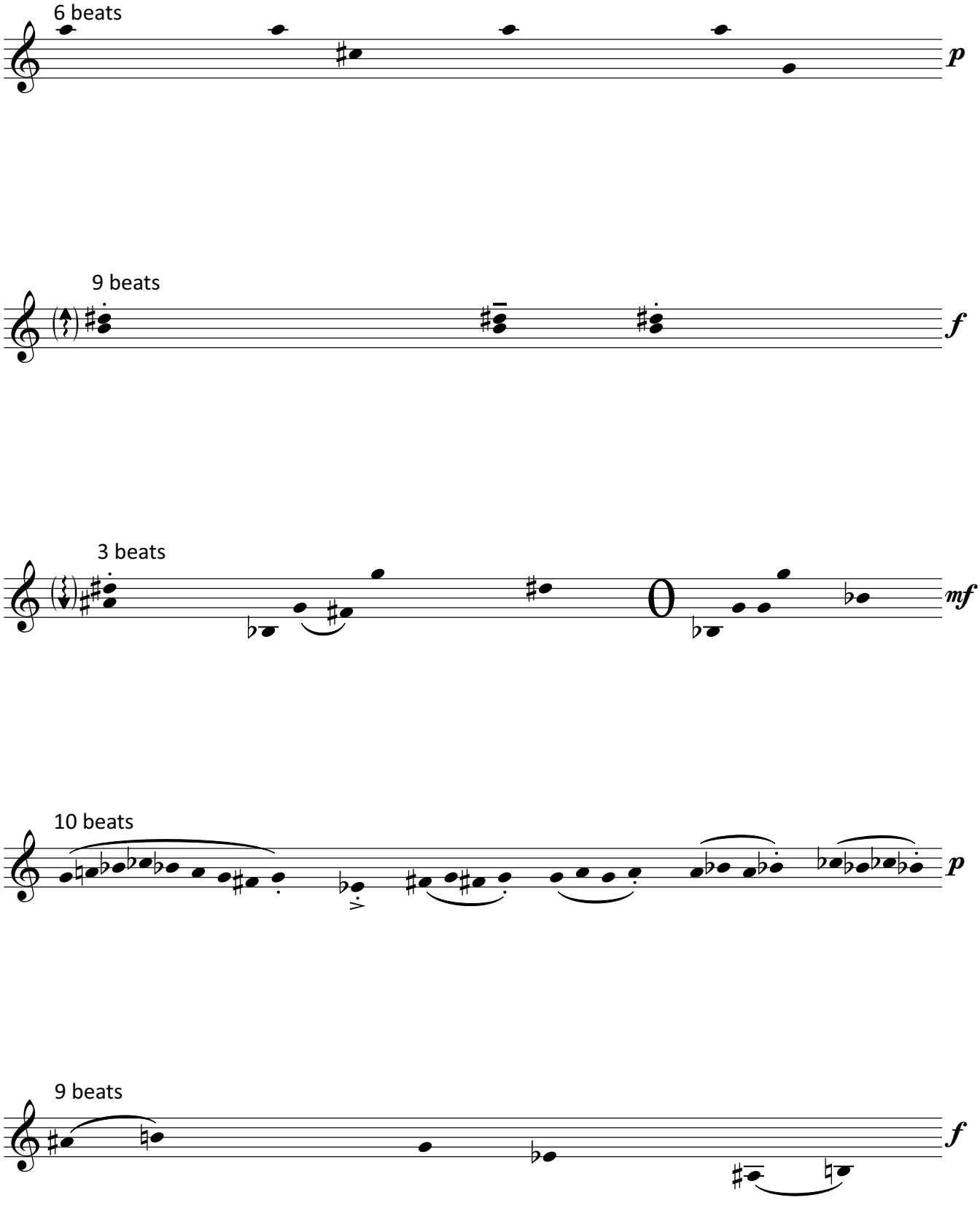

7 beats
fff

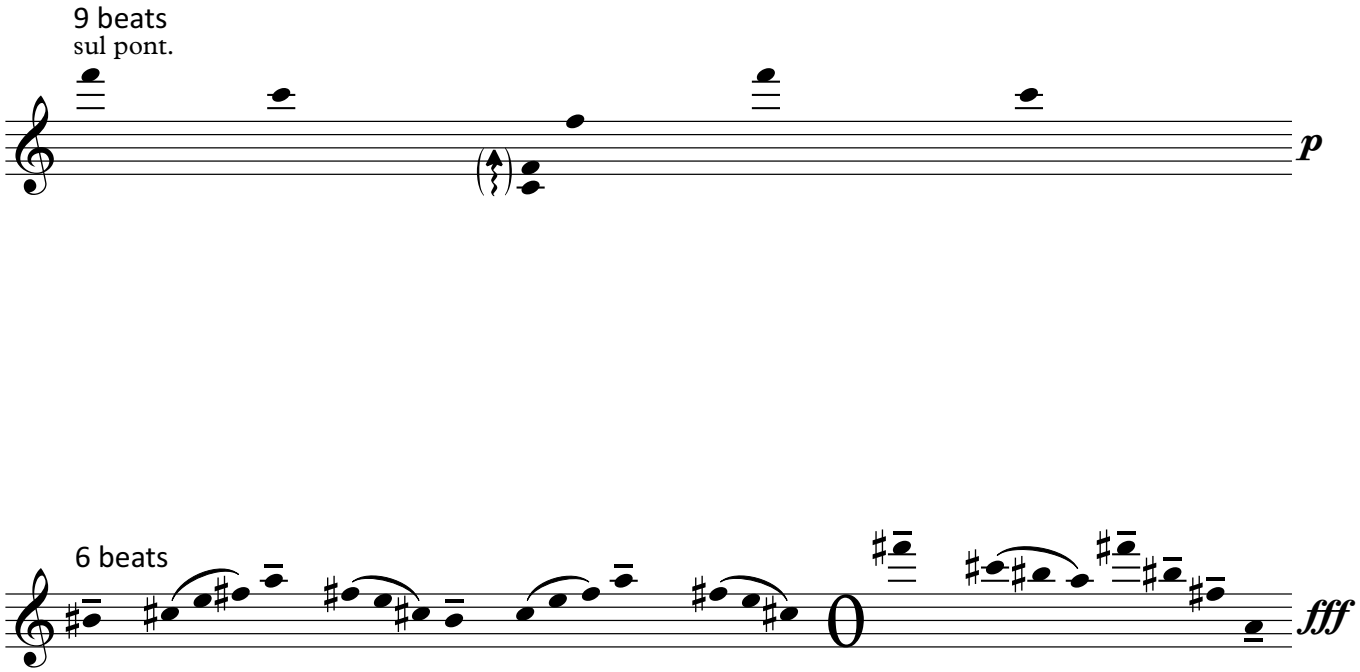

9 beats
fff

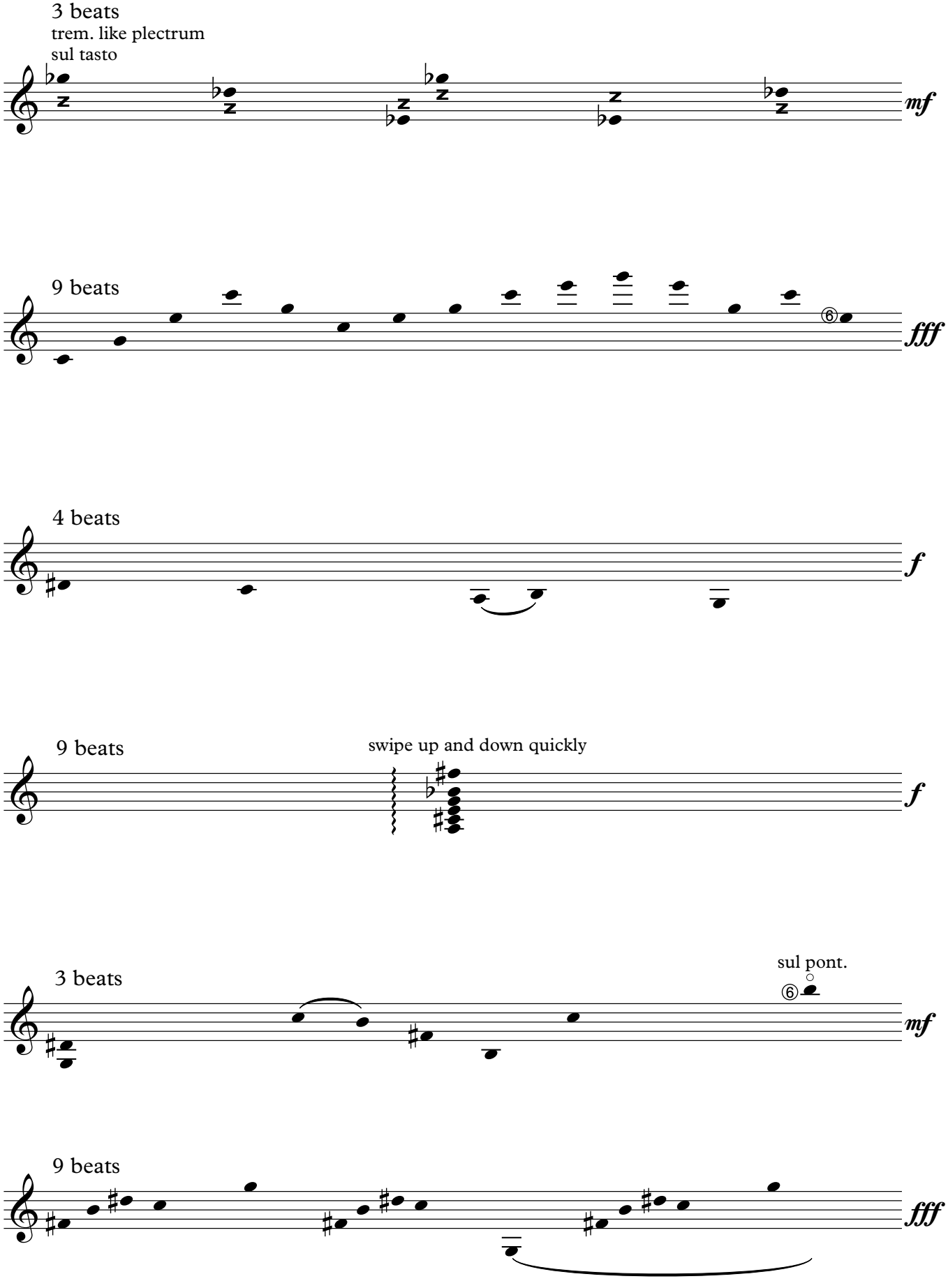

4 beats
f

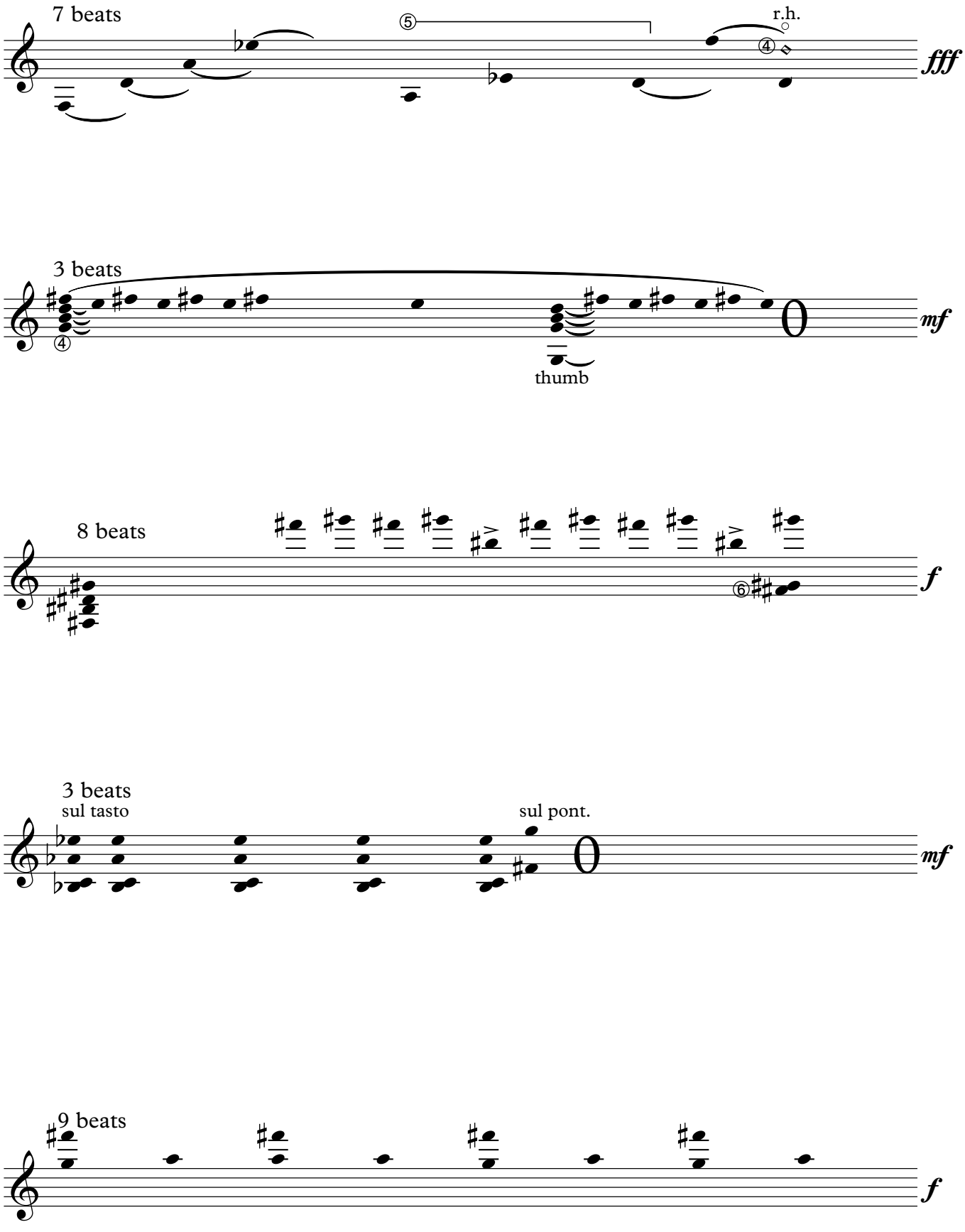

10 beats
mp

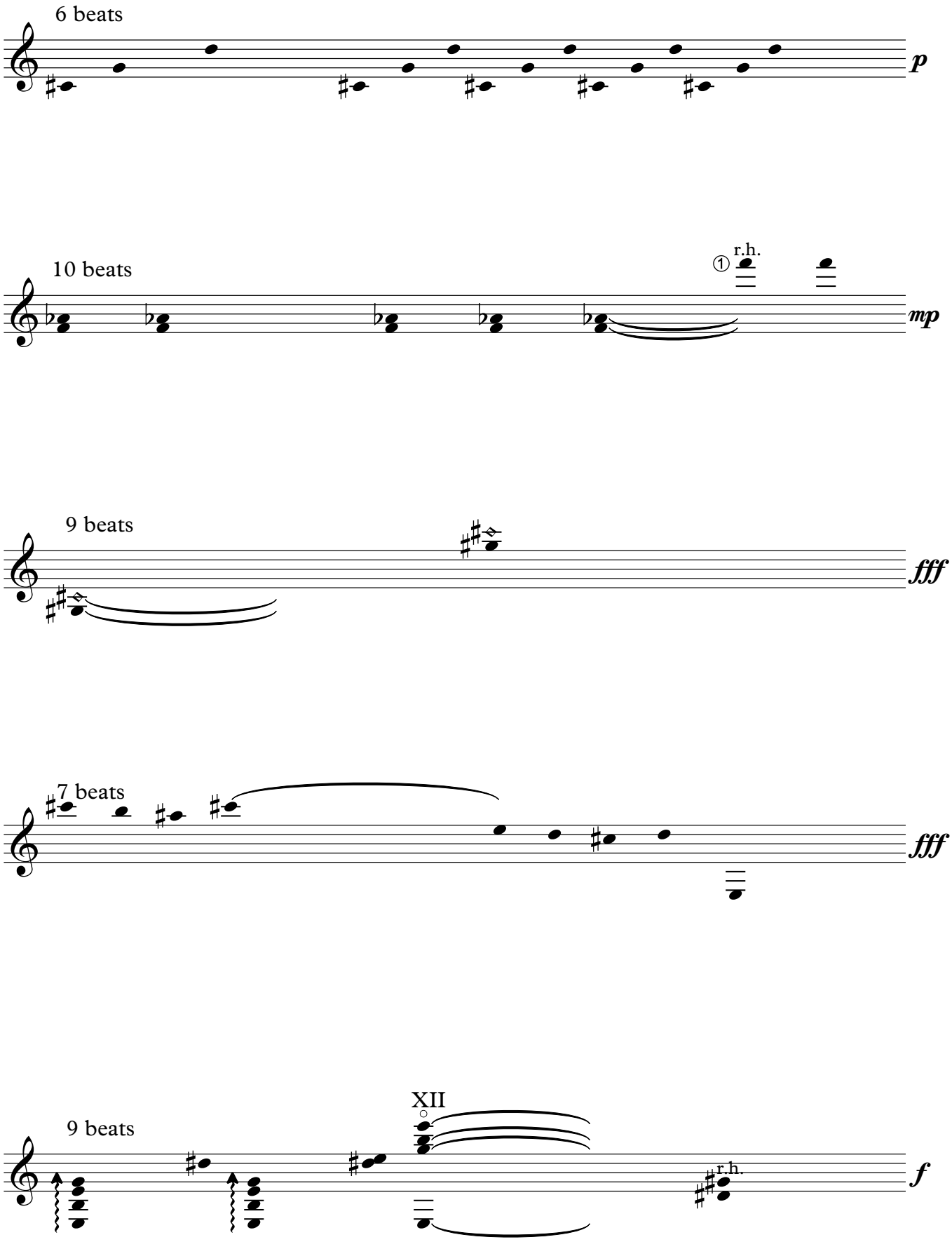

3 beats
mf

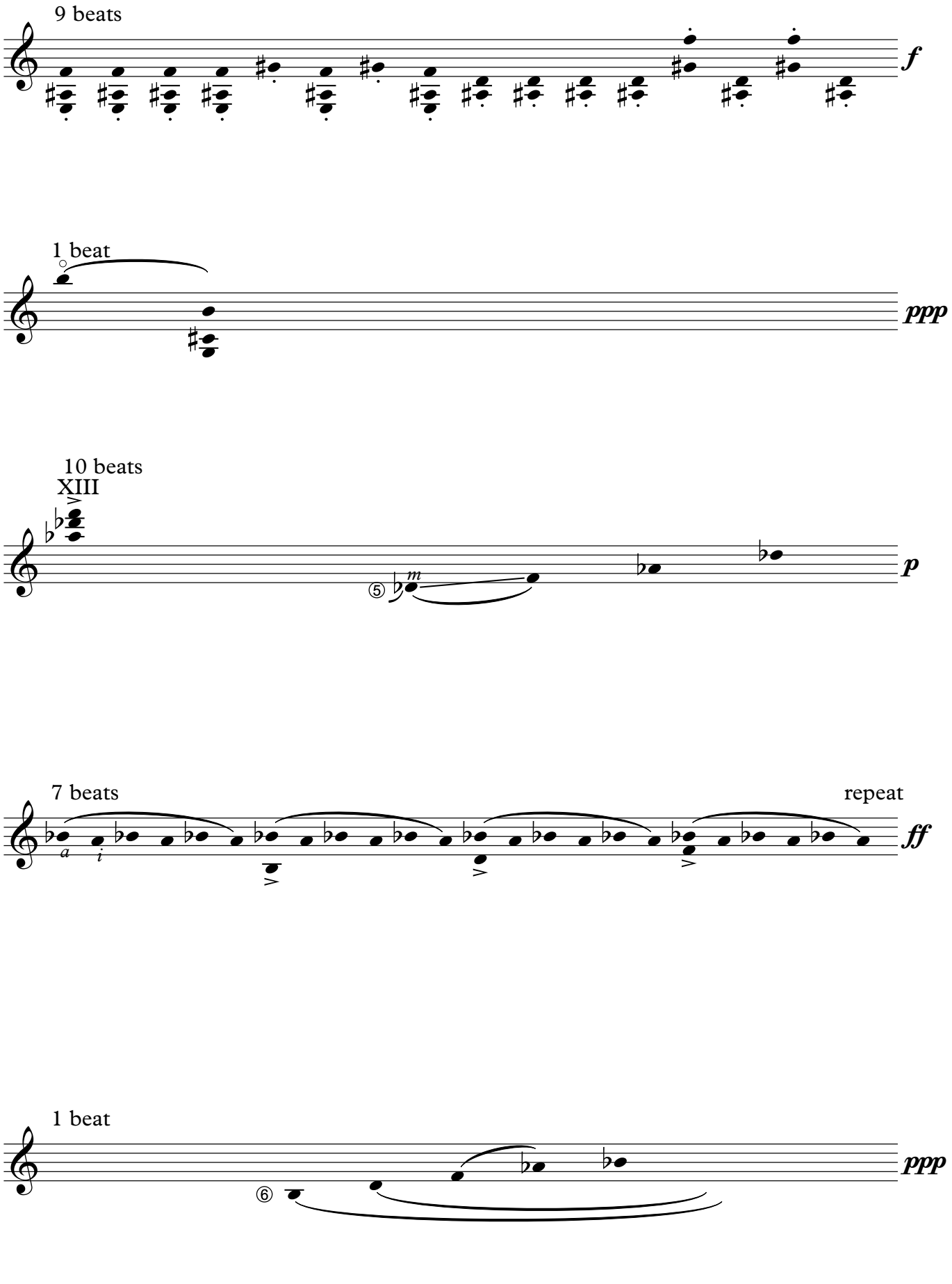

6 beats
p
9 beats
f
3 beats
mf
10 beats
p
9 beats
f

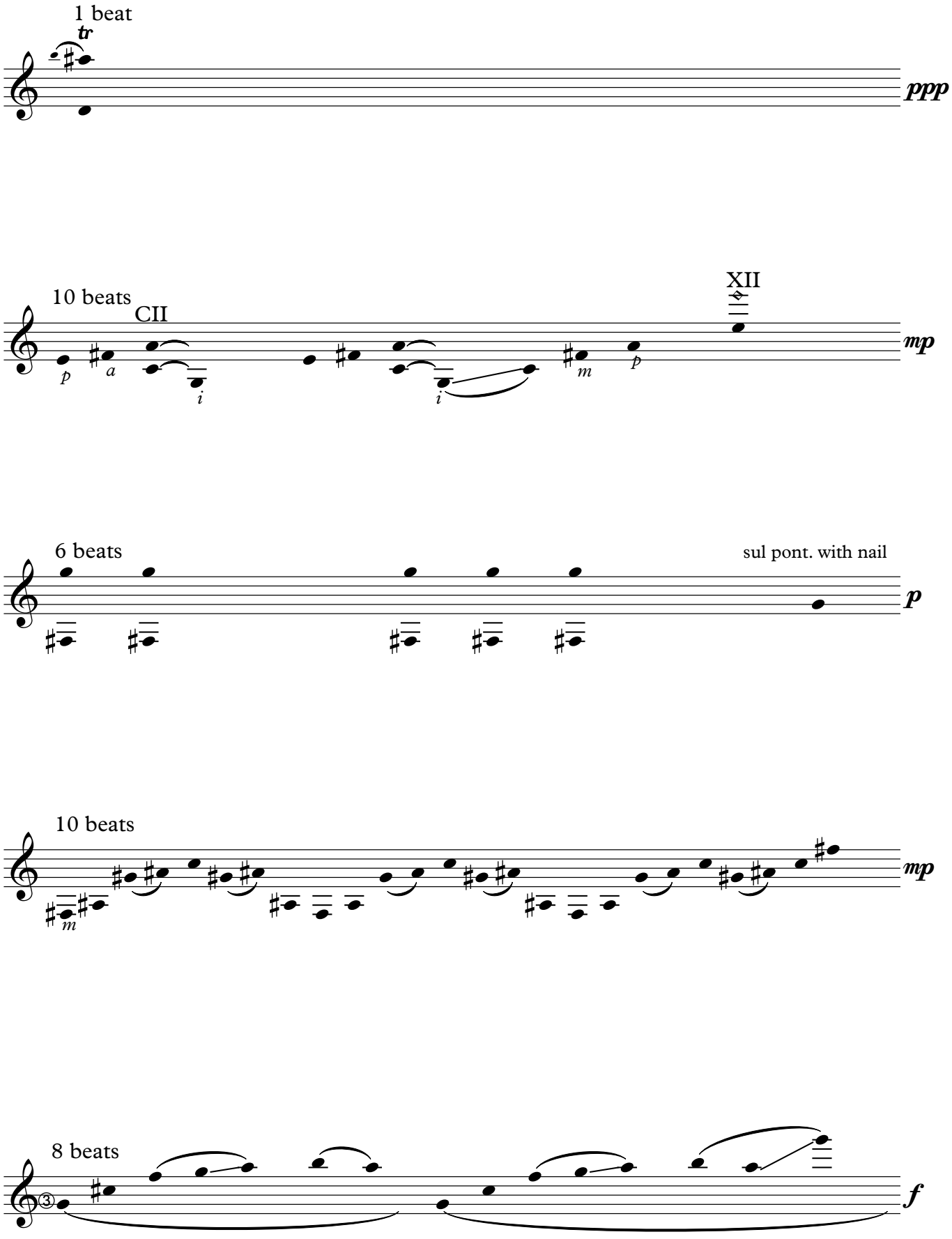

9 beats
sul pont.
p
6 beats
fff
10 beats
use l.h.
mp
4 beats
f


3 beats
trem. like plectrum
sul tasto
mf
9 beats
fff
4 beats
f
9 beats
swipe up and down quickly
f
3 beats
sul pont.
mf
9 beats
fff


7 beats
r.h.
fff
3 beats
mf
thumb
8 beats
f
3 beats
sul tasto
sul pont.
mf
9 beats
f


6 beats
p
10 beats
① r.h.
mp
9 beats
fff
7 beats
fff
9 beats
XII
r.h.
f


9 beats
f
1 beat
ppp
10 beats
XIII
p
7 beats
repeat
ff
1 beat
ppp


1 beat
tr
ppp
10 beats
CII
p
a
i
i
m
p
XII
mp
6 beats
sul pont. with nail
p
10 beats
m
mp
8 beats
③
f

Conclusion

The application of elements of mobility within music fashioned innovative composer-performer dynamics which could not be achieved through the standard practice of composing music, music that is static in relation. Static in the sense of what is written forming the anchor for how the composition should be performed in every iteration.

Mobile elements of music can offer a method of dynamism that can be structured and defined without incorporating the chaotic nature of full improvisation. This is not, however, to say that mobile music cannot, or should not, incorporate improvisation, because improvisation is key to interpreting mobile music: the very act of choosing from a collection of musical events, which event to perform at that moment, is the primary focus of mobile music.

To compose a piece of music which allows others to have a hand in the construction of the music and its realisation requires a certain level of subversion of the ego and a decentering of the composer. Robinson notes this when describing Henry Cowell's approach to how he wanted performers to consider his works of mobility, "Cowell was unconcerned about any transgression of his authorship" (Robinson, 2011, P. 300). Musical mobility necessitates a degree of detachment of the composer from the composition, to form metaphorically a worker cooperative with any person who wants to approach the piece of music in a performative manner. The composer must embrace the sacrificing of what makes a composition theirs, to accept the emancipation of the composition to be assembled and formed by outside forces.

Mobile music is yet to be incorporated and tested within the realm of music education. Exposure to mobile music could present potential and meaningful progressions in the area of performance and interpretation, allowing a more liberal method to how students approach the interpretation of existing works of music, whilst developing an understanding of how music can be formed through structure and emotion. It also provides a greater sense of pride knowing that the construction of the music has been completed through the creative capabilities of the

performer. The nuanced topic of interpretation within music would benefit from including more liberalised interpretive approaches like mobile form compositions.

As a composer, mobile technique challenges the creation of music and its intent, posing questions such as: Why do I write music? Who am I writing music for? Analysis of existing works can provide insights into the intent of the composers in the creation of their music. For example, it can be observed that composers such as Grainger, Cowell, Serocki, and Stockhausen imbue in their music a sense of identity and characteristics that can be discerned as unique, or attributable, to themselves. Music by Brown and Feldman, on the other hand, take an approach of ambiguity to identity, and in the case of Brown, discarding the notion altogether.

The composition of *Doux Languissant* was an exercise in creating a notion of identity, in order to ground the composition for listeners to relate their experiences to. This as opposed to the uncontrolled nature resulting from full improvisation of sound components. These outcomes can be seen in existing music such as Earle Brown's *December 1952*.

Throughout this process, I have experimented with the notion of identity and how it can be incorporated in my music, deciding whether it is to be a key principle in the music I create. As a result of this, I have concluded that identity is a fundamental principle in my music, with the outcome that listeners are able to relate to and memorise the music I produce. Although mobile forms interact seamlessly with increased levels of improvisation and less performative restrictions, it is possible, demonstrated by past composers, for mobile forms to be applied within compositions of more defined instruction, allowing variations to take place whilst simultaneously providing the listener music to relate to.

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Appendix

Appendix 1: Performance recordings

Steffan Schleiermacher's recording of Morton Feldman's *Intermission VI*

Morton Feldman: Early Piano Works (2003) Hat Hut Records, Ltd.

Kristine Scholz and Mats Persson's recordings of Morton Feldman's *Intermission VI*

Feldman: Complete Works for 2 Pianists (2011) Alice Musik Produktion

Pierre-Laurent Aimard's performance of Karlheinz Stockhausen's *Klavierstück XI*

https://www.youtube.com/watch?v=NxLMtP8ejKA

Prodromos Symeonidis' performance of Karlheinz Stockhausen's *Klavierstück XI*

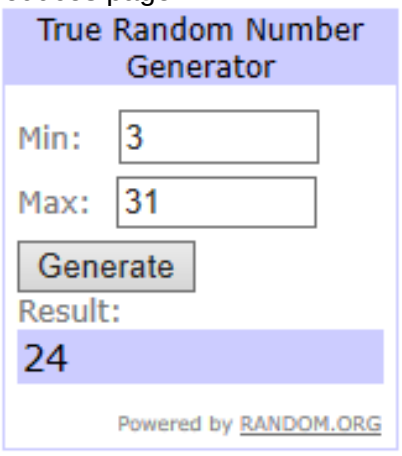
https://www.youtube.com/watch?v=UmCT69F03wo&list=PLJvPvs-zyPm57k-lCQYEvVjgFNzeR6WG2&index=15&t=0s

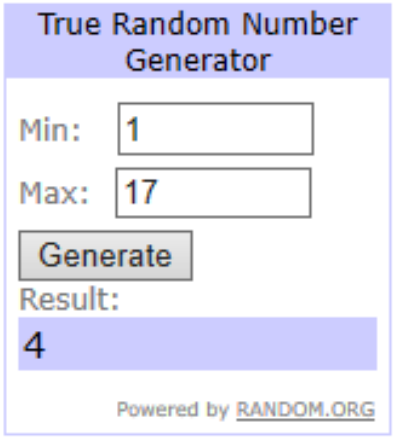
Appendix 2: Random number generator method of composing *Doux languissant*

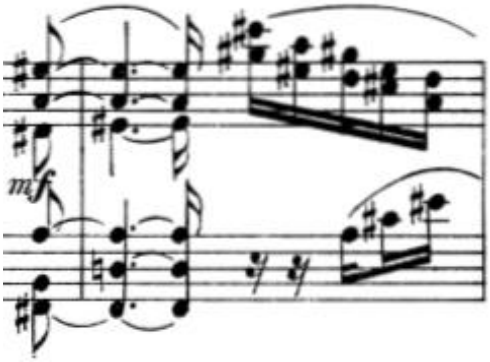
Select piece of music= Scriabin Piano Sonata 8

- Set RNG to select a random page out of the set of pages

  https://www.random.org/

- Pages 3-31
- RNG produces page 24
  - 

- Calculate total number of bars on specific page
- 17 bars on page 24
- Set separate RNG to pick a single bar out of the set of bars
- RNG produces bar 4
  - 

  - 
    - Last chord of previous bar included to show accidentals

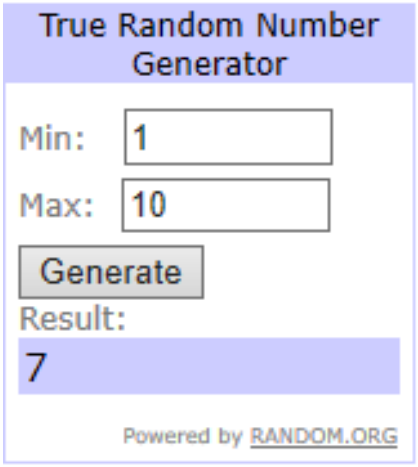
- Repeat process

Is it a problem if chords are repeated as a result of using RNG?

- No, explain

Do I assign a number of seconds (using RNG to select how many seconds) to each chord in order for the performer to choose how to play the chords (arpeggios, etc.) however they please within the allotted amount of time?

If this is the case:

- Set parameters of time in seconds: 1-10 seconds
- Use RNG
  - 

Assigning a dynamic to the chords:

- Set parameters of number of dynamics: 1-8
  - 1: PPP, 2: PP, 3: P, 4: MP, 5: MF, 6: F, 7: FF, 8: FFF
- Use RNG
  -