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DOCTOR OF PHILOSOPHY

Video annotation for the articulation and transmission of dance and movement knowledge

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Video Annotation for the Articulation and Transmission of Dance and Movement Knowledge

Rebecca Stancliffe

PhD

September 2018



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A thesis submitted in partial fulfilment of the University's requirements for the Degree of Doctor of Philosophy Content removed due to data protection considerations



Certificate of Ethical Approval

Applicant:

Rebecca Stancliffe

Project Title:

Dance Annotation

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

22 June 2015

Project Reference Number:

P33319



Certificate of Ethical Approval

Applicant:

Rebecca Stancliffe

Project Title:

Historial Project Video Annotation Study

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

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Access to Research Sources

This thesis explores and utilises a set of resources and tools, some of which are not publically available. This section provides a set of instructions for reader access.

Archival sources:

Chapters Four and Five look at the documentary practices of British choreographer Margaret Morris (1891–1980), specifically her method of movement notation *Danscript* and her choreographic notebooks.

Morris first published her notation in 1928 in *The Notation of Human Movement* and the limited run of copies means that it is now a rare book. *The Notation of Human Movement* can be accessed at

- The Ferguson Gallery archives
- Trinity Laban Conservatoire of Music and Dance

The more recent *Danscript: A Notation of Human Movement Evolved by Margaret Morris* (Morris and Anderson 1980), which is a transcript of a lecture given by Morris for the Dance Notation Bureau in New York can be accessed at

- Berlin University of the Arts
- Frankfurt University
- the National Resource centre for Dance, University of Surrey
- Trinity Laban Conservatoire of Music and Dance
- University of Calgary, Canada
- University of Roehampton

Published updates made to Danscript can be found in *My Life in Movement* (Morris 1969, 2003). In the absence of publications accounting for the evolution of Danscript, primary sources were consulted which can be accessed at The Fergusson Gallery in Perth, Scotland.

DVD-ROMs:

Chapter Six analyses excerpts from two DVD-ROMs: *Material for the Spine* (Paxton and Contredanse 2008) and *Improvisation Technologies* (Forsythe et. al 2012).

Material for the Spine (Paxton 2008) can be purchased directly from the publisher for €28. Visit <u>https://www.contredanse.org</u> for more information. Copies of *Material for the Spine* can also be accessed in person at university libraries including

- Coventry University
- Trinity Laban Conservatoire of Music and Dance
- University of Roehampton

For other libraries that stock *Material for the Spine* visit <u>https://www.worldcat.org</u>, the world's largest network of library content and services.

It is difficult to purchase a personal copy of *Improvisation Technologies*. On-line stores list the DVD-ROM as either out of stock or selling for prices starting at £125 up to over £3000. *Improvisation Technologies* is, however, available at a number of university libraries including

- Coventry University
- Trinity Laban Conservatoire of Music and Dance
- University of Roehampton
- University of Surrey

The reader can find their nearest copy by visiting <u>https://www.worldcat.org</u>.

Websites:

The two website publications analysed and discussed in Chapter Six, *No Time to Fly* (Hay and Motion Bank 2013) and *Synchronous Objects for One Flat Thing reproduced* (year) are both readily accessible online. It has been noted, however, that the demise of Adobe Flash has implications for the longevity of *Synchronous Objects* as a multi-media publication (Zuniga Shaw 2017: 105).

Annotation Tools:

To discuss what video annotation offers dance studies as an analytic method, Chapter Seven utilises the video annotation tools DancePro and Piecemaker2. It should be noted that both of these tools are not publically available: DancePro is an unreleased prototype tool as is Piecemaker2 which is currently being developed into Piecemaker3.

Glossary

Choreutics	(p. 24) <i>Choreutics</i> (also known as <i>Space Harmony</i>) is a theoretical framework concerning spatial structures and relationships in movement. It was developed by Hungarian-born Rudolf Laban (1879–1958) and forms a central component of Laban Movement Analysis (LMA).
Collective individuation	(p.26) See entry for <i>individuation</i> .
Dialogical mnemotechnics	(p. 19) I characterise the dialogical mnemotechnical properties of annotation as crucial to its mark-up status. Annotation is different to mnemotechnics (see entry below) such as writing and notation because it creates a record or augmentation in relation to a mnemonic record.
Eukinetics	(p. 24, footnote) <i>Eukinetics</i> (also known as <i>Effort</i>) is a theory of movement dynamics and effort. It a core component of LMA. The relationship between Effort and spatial unfolding is referred to as <i>Movement Harmony</i> (Maletic 1987: 172).
Folksonomies	(p.66) See entry for <i>folksonomy</i> .
Folksonomy	Bottom-up user-driven classification system using labels or tags. The opposite of top-down taxonomies.
Grammatisation	(p. 34) Following philosopher Bernard Stiegler (2014a), I use the term <i>grammatisation</i> to refer to the translation that effects a transformation of the original spatial and temporal properties of temporal flow. Speech, for example, is grammatised through the written word. It is "the process of describing and formalizing human behavior into letters, words, writing, and code so that it can be reproduced" (Stiegler n.d.) and "whereby the flux and flow networking our existences become discreet elements" (Stiegler 2006: 1).
Individuate	(p. 30) See the entry for <i>individuation</i> .
Individuation	(p. 26) The term <i>individuation</i> has different meanings and connotations depending on the field of use. It is used in the fields of psychology (to denote the development of the self), media studies (to denote the mass customisation of media content), in physics, and philosophy. This thesis adopts the philosophical meaning of the term according to the work of philosophers Gilbert Simondon (1924–1989) and Bernard Stiegler (1952-).
	Muriel Combes, author of <i>Gilbert Simondon and the Philosophy of the Transindividual</i> (2013), argues that "The philosophical tradition deals with the problem of individuation entirely on the basis of the individual. As a consequence, it stubbornly wishes to disclose a principle of individuation" (2013: 1-2 [my emphasis]). As I understand

	it, Simondon argues that the individual is not a predetermined and preconfigured subject but <i>becomes</i> through an ongoing process, referred to as individuation. At a given movement in time, the individual is only a snapshot, a 'pre-individual' (Combes 2013: 3). This engenders an understanding of potentiality—a process that is neither stable nor unstable, but metastable (Combes 2013: 3). It is not only the individual that is involved in individuation but the relations between the individual and their environment; they co-construct each other (transindividuation). The <i>I</i> , as a thinking individual, can only be thought of in relation to <i>we</i> , the collective individual. The 'I' becomes through collective traditions that it inherits thus acknowledge other's existence.
Kinesphere	(p. 156) "The kinesphere is the sphere around the body whose periphery can be reached by easily extended limbs without stepping away from that place which is the point of support when standing on one foot, which we will shall call the 'stance,' or place" (Laban 2011: 10).
Marginalia	(p. 28) The notes or comments that readers make in the margins of books.
Metadata	(p. 21) Data about data. This can include labels or keywords that identify a choreographic work such as the title of the work, the name of the choreographer and dancers, the year of its production, and so forth.
Metastability	(p. 26) I use <i>metastability</i> following Simondon who proposes that metastability is concerned neither with stability nor instability. Instead, it ensures that potential is allowed to evolve rather than be limited or destroyed (Simondon 2011: 411-412 and 301).
Mnemotechnics	(p. 26) Digital technologies that support memory and extend the cognitive capacities of the mind. The "contemporary forms of what the Greeks of antiquity called <i>hypomnemata</i> " (Stiegler 2014b: 19 [emphasis in original]), including "all kinds of memory substitutes and externalizations such as writing, photography, machines" (Stiegler n.d.). Mnemotechnics enable individual memories to become collective memories in the form of artefacts (Stiegler 2014a). Mnemotechnics are also referred to as <i>tertiary retentions</i> .
Mnemotechnologies	(p. 29) See entry for <i>mnemotechnics</i> .
Pharmakon	(p. 35) Something that exists as both a poison and a remedy (Stiegler 2014a).
Primary retentions	(p. 36) See entry for <i>retention</i> .
Protention	(p. 36) What an individual anticipates or expects to see in future experiences (Stiegler 2014a).

Retention	(p. 36) <i>Primary retentions</i> are sense perceptions (Stiegler n.d.). Primary retentions are conditioned by what an individual has retained in the course of prior experience, which are classified as <i>secondary retentions</i> .
	(p.37) <i>Secondary retentions</i> are memories. They are former primary retentions that are now part of the past.
	(p. 37) Tertiary retentions: Retentions and protentions "can become collective via tertiary retentions ", or mnemotechnics (Stiegler). Tertiary retentions "are media or culture [] or what is sometimes called cultural memory" (Stiegler n.d).
Retentional finitude	(p. 35) Retentions are determined by a set of criteria that arises from prior experience. <i>Retentional Finitude</i> is the term that Stiegler uses to refer to the limited retentional capacity of humans which is both strengthened and weakened by the reliance on mnemotechnics (1998: 17).
Secondary retentions	(p. 36) See entry for <i>retention</i> .
Taxonomies	(p. 66) See entry for <i>taxonomy</i> .
Taxonomy	Top-down classification system using labels or tags. The opposite of bottom-up user-driven folksonomies.
Technical Individuation	(p. 26) Simondon's thesis of technical individuation accounts for how the individual <i>becomes</i> through their engagement with mnemotechnics. Thus, the individual is a transindividual, a concept that Stiegler borrows from Simondon to refer to "the realm of culture, the cultural unconscious, memory that transits across individuals and generations" (Stiegler n.d).
Tertiary retentions	(p. 37) See entry for <i>retention</i> .
Transduction	The term <i>transduction</i> has different meanings and connotations depending on the field of use. The term is used in biophysics (to denote a change in energy), genetics (to denote the transfer of DNA from one cell to another), machine learning (drawing conclusions about new data from earlier data), physiology (transference of stimuli to the nervous system), psychology (reasoning from specific cases to general cases), and to refer to the process of energy conversion.
	Philosopher Brian Rotman (2008: 27) uses the term <i>transduction</i> to refer to "the discourses of narrative prose" as a principle of creation that has co-evolved with "mimesis (the voices of poetic diction)". Rotman refers to <i>transduction</i> in discussing of the history of reading, which he describes as "the history of redressing what writing fails to

represent, namely "the entire field of effect conveyed and induced by human vocality." (2008: 27)

This thesis adopts the philosophical meaning of the term *transduction* according to the work Stiegler, which refers to co-constructedness of individuation. This is in line with the use of the term *technical individuation* to account for how technologies of cultural memory (mnemotechnics) impact understanding and collective knowledge. "Transduction corresponds to that existence of relations coming into existence when a pre-individual being individuates itself" (Stiegler 2006: 4).

- Transductive(p. 38)See entry for *transduction*.
- Transindividuation (p. 28) See entry for *individuation*.

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Abstract

This PhD thesis examines video annotation as a method of analysis and a tool for the transmission of dance and movement knowledge. Since the late 1990s, a handful of dance research projects have emerged that utilise video annotation, but in these the value of video annotation is assumed or implied. The outputs from these projects, such as multi-media publications and video annotation tools, are claimed to be celebrated contributions to dance scholarship. One of the challenges for this research is that the term *annotation* has gained currency in dance with the rise in the interdisciplinary and digital working characteristic of some areas of contemporary dance scholarship. However, the term and the practice are not yet clearly defined or understood: it is not fully known what annotation is and how it operates. This exposes a significant gap in the literature which this thesis addresses.

The intentions of this thesis are threefold. Through descriptive and comparative analysis and theory building, I explore what annotation is and the experience of engaging with it. I draw attention to the **dialogical mnemotechnical** properties of annotation and contemplate how annotation conditions the way dance is seen, analysed, interpreted, and understood. My study highlights how video annotation re-authors video sources, controlling the narrative that is transmitted about artistic practices. Secondly, I offer a context for the fairly recent emergence of video annotation by situating it as part of an analytic trajectory for dance. By engaging in archival research and the analysis and interpretation of primary sources (including choreographic notebooks, unpublished manuscripts and letters), I examine a selection of dance and movement notation systems from the Renaissance and the twentieth century. A narrative of the invention and re-invention of notation as social and technological systems is established, and it is within this never-ending search for suitable methods of articulating and transmitting dance and movement knowledge that I situate the annotation contributes to, and advances, the individual and collective knowledge of dance because it helps artists, researchers, and audiences understand dance practices from different perspectives.

CHAPTER ONE: INTRODUCTION

For centuries, innovators have employed or devised methods for articulating and transmitting the skills and knowledge acquired through the practical and theoretical experience of dance, or, in other words, dance and movement knowledge.^{1 2} Western dance and movement notation is one such method.³ It has a rich heritage comprised of different approaches developed to suit the needs and demands of ballet masters, choreographers, and researchers. Systems of dance and movement notation are used to translate sequences of dance steps and choreographic works into a format, a notation score, that can be circulated amongst a community of users. This is possible because shared standards and conventions, in the form of analytic and conceptual frameworks, are used that prescribe what kind of information is captured in the notation score. Subsequently, this method of articulating and transmitting dance and movement knowledge becomes, in part, what is known about the dance. I say "in part" because dance traditions are also influenced by other physical artefacts, such as choreographic notebooks that serve as idiosyncratic processes of thinking, reflecting, clarifying, and editing thoughts and ideas; film and video which capture a time-based visual record of dance; and vocabularies that are associated with techniques, methods, and scholarship. These dance records are findable in archives, libraries, and online, along with other materials such as letters, photographs, and programme notes. These documentary methods condition what is, and can be, known about dance. This is because they translate an ephemeral medium into a fixed and stable form, making it available for circulation and study.⁴ As a result, documentary methods and the artefacts they create contribute towards a collective knowledge of dance in a Western context.⁵

¹ In the context of this study, I use the term *dance and movement knowledge* broadly to refer to the skills and knowledge acquired through the practical and theoretical experience of dance. This is not to say that all movement is dance, or dance must be comprised of movement. I used this term in recognition that knowing in dance is not always related to the choreographic, the mechanics of the body in motion, or the lived experience, and that may arises through different experiences and processes. Importantly, I am interested in how analytic and documentary practices, video annotation in particular, can support the articulation and transmission of different practices and methodologies, including those that feature little or no movement in the dance sense.

² For an account of what kind of knowledge is generated through choreography and performance see *Knowing through dance-making* (Pakes 2017); for an account of what might be understood as the outcomes of practiceas-research and its relation to the knowledge economy see *That Thing Produced* (Ellis 2018); for a differentiation between choreographic education and the personal development in knowledge through choreography see *Identifying Choreographic knowledge* (Kim 2016); for an account of how digital artefacts and technologies, including those discussed in this thesis, inform and problematise the appreciation and perception of dance see *Choreographic Knowledge and Aesthetic Empiricism* (Blades 2018).

³ I use *movement notation* to refer to systems intended to document of all kinds of human movement and *dance notation* for systems designed especially for dance.

⁴ The ontology of live performance is articulated in the work of dance scholar Martha Siegel (1972), performance studies scholar Peggy Phelan (1993), theatre and performance studies scholar Rebecca Schneider (2001), performance scholar Matthew Reason (2006), amongst others.

⁵ Documentary methods and resulting artefacts function in other ways, in facilitating creative processes for example. This thesis focuses specifically on how they support **individuation** and thus **collective individuation** by enabling cultural memory (see Chapter Two).

Dance and movement knowledge can be formulated through different channels and perspectives, and knowledge about dance arises from an oral tradition and the body-to-body transmission of movement ideas as well as artefacts. This invites consideration of what persists in different kinds of documentary practices, what is privileged, and what is overlooked. Theatre scholar Gabriele Brandstetter states that:

Finding a language for experience and perception is a challenge that can never be met. However, accepting the challenge is worthwhile because it is the only way of expressing the different experiences and knowledge forms and putting them in a relation in which tension, contradictions, words and boundaries become visible. (2007: 43-44)

The knowledge that arises from dance, Brandstetter goes on to explain, is "A *different* kind of knowledge from what we generally accept as rational, technical or discursive knowledge" (2007: 40 [emphasis in original]). It is embodied, ineffable, and unfixed. Brandstetter here is referring to the silent, tacit, embodied knowledge that is passed between bodies. It is "what we know but can't articulate" (Patton 2015: 119).

Dance scholar Franz Anton Cramer, whose research interests include archival practices, points out that dance "does not constitute an object" [emphasis in original] and contains a significant amount of "silent knowledge" that cannot be captured through metadata (data about data) (2007: 11, 13). In other words, dance consists of explicit and implicit knowledge. The former can often be captured in artefacts while the latter, as suggested by Brandstetter above, is harder to objectify and reduce to a single name or label. Traditionally (and typically) the metadata attributed to physical and online dance records consists of labels or keywords that include the name of the choreographer, the title of the choreographic work, the year of its production, and so forth (Cramer 2007: 13). This is how dance materials are organised, retrievable, and searchable amongst a large body of materials, or corpora. This leads Cramer to contemplate "which aspects and phenomenological qualities of dance should be invested in their preservation, documentation and transmission" to accurately, or truthfully, represent dance (2007: 13). This brings forth the question of how knowledge other than formal vocabularies of dance techniques and bibliographic metadata, such as tacit embedded knowledge, might be utilised and, subsequently, circulate more successfully in the digital milieu. Contemplating this becomes all the more pertinent with the development of the semantic web, where the meanings of objects are understood by computers and human agents alike.⁶

⁶ In 2001, Tim Berners-Lee, the founder of the World Wide Web, introduced the concept of the Semantic Web. His vision was that "all objects are represented by standard ontologies [... that would] regulate the semantic meaning of the objects in a way that enables machines to understand and manipulate data" (Hui 2016: 68).

The concretisation of dance through different documentary practices is a selective and distortive practice. Not all aspects of what is or can be known is succinctly captured, meaning that contributions to the collective knowledge of dance are also characterised by omission and loss. Tensions emerge between what is possible to document through existing methods and the needs of dancers, choreographers, and the scholarly dance community. To use the example of dance and movement notation, systems are invented, applied, and tested over time. This results in either the development and improvement of systems and, therefore their continued application, or a determination that they are no longer fit for purpose. The Beauchamp-Feuillet notation system, first published in 1700, is one example of this trajectory. As one of the first analytic frameworks invented for dance, the Beauchamp-Feuillet notation system was instrumental to the categorisation and standardisation of dance steps that enabled a shared vocabulary to emerge (Foster 2011: 16 and Laurenti 1994: 91). The potential, efficacy, and limitations of this notation were explored by ballet masters of the time, including Pierre Rameau (1674–1748) and Georges Noverre (1727–1810), when it was amended and developed to support new and divergent ideas about dance. The Beauchamp-Feuillet system fell into disuse towards the end of the eighteenth century as dance fashions evolved, yet it had longitudinal impact. The twentieth century Hungarian-born choreographer and movement theorist Rudolf von Laban (1879– 1958) was one figure who explored what the notation had to offer and adopted features of the Beauchamp-Feuillet system in the advancement of his own. This example, which is discussed in more detail later in this thesis, shows how dance and movement notation may develop with ideas about dance but alternative methods of documentation are pursued when the tension between what it can record and the needs of its users' ruptures. This indicates that formerly trusted and 'complete' methods can reveal practical and theoretical limitations, whether at the time of invention or arising from later developments in thinking.

The discussion of notation is important for this study, because its rich heritage of invention and reinvention suggests how ideas about dance and documentary methods co-evolve. Since the earliest known record of dance notation was used in the mid-fifteenth century, an estimated eighty-six systems for Western dance had been invented by the early 1980s (Hutchinson Guest 1984: 201-203). Yet today, there is a general feeling of dissatisfaction with traditional codified notation systems (Bleeker 2010: 3), because they are perceived as being too difficult and time-consuming to use by many dancers and choreographers. Moreover, according to dance scholar and notation expert Ann Hutchinson Guest (1984: 137), "Choreographers are so accustomed to working without notation," resulting in a resistance or reluctance to use it. Some argue that notation cannot sufficiently capture the knowledge arising from contemporary movement practices (Dixon 2007: 631, Forsythe cited in OpenEndedGroup 1999 and Preston-Dunlop 1992: 21). For some there is the need or desire "to make the organizing principles [of dance] visibly persist" (Forsythe 2008), or to create a system of notation particular to a choreographer's work or use of vocabulary (Hoogenboom 2007). This dissatisfaction, dance scholar Maaike Bleeker suggests, had led to the development of new tools for analysis (2010: 3). In this thesis, I examine one of these new tools, video annotation.

Video has become the go-to mode of documenting contemporary movement practices (Dance Heritage Coalition 2006: 11), because it is easy to use and affordable. While video captures an immediate time-based visual record of dance, it is a non-notational medium: it does not elucidate details of movement or choreographic practices and processes as notation claims to, nor has it removed the need to conduct an analysis of video content.⁷ This study examines to what extent video annotation exploits the rich visual data captured on film in a way that is beneficial for articulating and transmitting details of dance and movement knowledge. This thesis, in part, contemplates to what extent video annotation is a viable alternative practice to dance and movement notation, one that satisfies a need to give prominence to different kinds of knowledge and different choreographic methodologies. The question of what video annotation offers dance scholarship motivates this research.

For me, the annotation of dance artefacts is not a new practice. My experience in Labanotation has lead me to think about what notation offers as a standalone practice, particularly in instances where the intention is to give prominence to more than just the movement of the mechanised body, which is now an artistic trend (as well as works that feature little or no movement in the dance sense at all). Labanotation is a comprehensive method of documentation, and I believe that learning to notate movement and use its symbology, grammar, and syntax develops the analytic eye⁸ and movement understanding. However, the challenges Labanotation presents for the articulation and transmission of certain kinds of dance and movement knowledge, the tacit and the experiential, has led me seek additional methods of analysis.

⁷ Reason's *Documentation, Disappearance and the Representation of Live* Performance (2006) discusses the documentation of practice forms. Part two (Reason 2006: 73-91) discusses the relationship between video documents and live performance with reference to aesthetics, ephemerality, the function of video recording and cultural memory.

⁸ The term *analytical eye* was coined by choreographer William Forsythe in his CD/DVD-ROM *Improvisation Technologies* which uses graphical annotations to draw attention to the thinking behind his improvisational methods. I have adopted this term and use it more broadly to refer to how comprehension develops through analogue and digital notational technologies that break down movement into units of analysis.

In two research projects (Stancliffe 2008 and Stancliffe 2010b), I used annotation to augment Labanotation scores to draw attention to the knowledge arrived at through movement analysis. In the

first of these projects, I analysed three Labanotation scores, two of which I had written, to examine the work of American choreographer William Forsythe (1949-). Labanotation translates the movement of different body parts in time and space onto the page and I analysed to what extent the spatial concepts and the use of the body as represented in the score could be classified as Forsythian, e.g. as belonging to the choreographic style of Forsythe. The combination of symbols representing direction, dynamics, and body parts means that the notation of any kind of mechanical movement-walking, jumping, breathing, blinking—is possible through Labanotation. The combination of symbols also means that a particular way of writing movement can be isolated for analysis, which cannot usually be undertaken on a symbolby-symbol basis but requires clusters of symbols. I devised



Figure 1: A page of a Labanotation score annotated with colour.

two methods of spatial analysis, spring-boarding from Laban's **Choreutics**,⁹ but which could be applied to Labanotation.¹⁰ I found it necessary to give prominence to the application and results of this analysis for my argument to be clearly articulated and transmitted to the notation score's reader. Colour-coding symbol clusters made it easy to direct attention to the parts of the score that had been analysed and to cross reference with a key that I established (Figure 1).

I applied the colour-coding of symbol clusters in a second research project, but also experimented with an annotation overlay to draw out further information that was useful to understanding the analytic work I had conducted. I had become interested in the different kinds of knowledge that exist in dance, in particular, the knowledge that the dancer has about a choreographic work. I contemplated how the experiential knowledge of the dancer, which is rarely documented in notation, could provide

⁹ Laban's search to understand the inner structure of movement can be divided into four categories: the objective classification and description of movement as underlying principles for Labanotation, the theory of spatial structure and relationships of movement known as *Space Harmony* or *Choreutics*, a theory of movement dynamics known as *Effort* or *Eukinetics*, and the relationship between Effort and spatial unfolding referred to as *Movement Harmony* (Maletic 1987: 172). These categories are intrinsically woven, but it is their complexity that results in the separate discussion of each (Maletic 1987: 126, 172).

¹⁰ Labanotation and Choreutics developed at different times and with input from different people. Although they originate in the same ideas about dance, they are not fully compatible.

qualitative and performative insight into a work and, therefore, augment understanding. I notated a choreographic excerpt of a piece I had performed to create a score from the perspective of the 'Labanotator-as-performer' and commissioned another notator to notate the same excerpt. I then undertook a comparative analysis of these two scores.



Figure 2 (top): A page of a Labanotation score annotated with colour. Figure 3 (bottom): A page of a Labanotation score annotated with colour and using a transparent overlay.

During the notation process, I became acutely aware of the limitations of Labanotation for recording details that were fundamental to the performance of the work. Throughout the choreography, for example, there were moments where the timing of movement was determined either in response to the other dancers on stage or in collaboration with them. There was also a consistent use of imagery that was applied to the movement which characterised performance intention and the choreographic aesthetic. This particular use of timing and imagery is difficult to represent using Labanotation symbology alone, so I used annotation to make these details more explicit to the score reader. I used two different colours to represent moments where the performer is permitted freedom to explore movement material and for moments when the steps were not set, or of primary importance, but were used as a vehicle to give direction to specific movement ideas (Figure 2). This colour-coding was applied to the notation symbols directly. To record details relating to specific use of imagery, I used a transparent overlay consisting of overhead projector (OHP) paper. This meant that information could be added to the score in a way that the notation underneath was fully visible (Figure 3). Importantly, the notation, which formed a base layer, was not directly altered by the annotation. The notation reader could choose to read the score alone (Figure 2) or through the annotated overlay (Figure 3).

The use of colour-coding and annotation overlay felt like a workable solution to draw attention to the analytic work I had conducted. However, I became interested in alternative ways

of working with notation that might more suitably capture the experiential knowledge of the dancer

but also be flexible enough to accommodate the decision-making of the dancer when interpretation or movement content was not set—in improvisation, for example. So, I explored how a notation score could be created for an improvised choreographic work (Stancliffe 2010a). The choreographer with whom I was working devised a methodology that relied on the dancers' continuous reflection, thinking upon, and evaluation of their decision-making in the moment of performance. There was no movement score to follow, nor a series of instructions that structured the activity of the dancers: the linearity of the work was open, decided by the dancers as they performed. As a notator, the challenge was to represent the choices that the dancers made in a way that did not stabilise them as something concrete and without prescribing the physical movements performed. In other words, the score had to embody an understanding that dancers responded both intuitively through improvisation in relation to the activity of the other dancers on stage and in a state of pre-reflection. Yet, the score had to provide a structure that could guide future instantiations of the work. This was an enormous undertaking in terms of labour and conceptual investigation, and, unfortunately, the potential of this research was not fully realised owing to the limited funding and time-frame of the commission.

It seems that any method or approach that strives to articulate and transmit the thinking and ideas relating to embodied knowledge and the choreographic would need to support the metastability of experience and knowledge. I use metastability following philosopher Gilbert Simondon (2011 and Combes 2013), whose thesis of technical individuation accounts for how the individual, who is not a predetermined nor preconfigured subject, 'becomes' through their engagement with technologies of memory and communication (mnemotechnics).¹¹ Muriel Combes, author of *Gilbert Simondon and the* Philosophy of the Transindividual, argues that, "The philosophical tradition deals with the problem of individuation entirely on the basis of the individual. As a consequence, it stubbornly wishes to disclose a principle of individuation" (2013: 1-2). As I understand, Simondon proposes that the individual becomes through an ongoing process and is, at any given moment in time, only a snapshot, a "preindividual" (Combes 2013: 3). Simondon proposes that metastability is a concept that is concerned neither with stability nor instability. Instead, it ensures that potential can evolve rather than being limited or destroyed (Simondon 2011: 411-412, 301). It is not only the individual that is accountable for individuation but also the relationships between the individual and the environment, and the environment and the individual; they co-construct each other. This is an important concept, because it means that individuation and collective individuation (the becoming of a collective, or 'we') is coconstructed with mnemotechnics such as writing and, in the context of this research, the methods used to articulate and transmit dance and movement knowledge.

¹¹¹¹ *Individuation* is a philosophical concept that accounts for how individual beings are distinct from others.

For the discussion of dance and movement knowledge, a drive towards metastability seems as though it would discourage methods and frameworks that place limitations on what can be discovered or known about dance. Instead, metastability would build structures or frameworks that support individual or collective individuation. In other words, artefacts would be able to grow, develop, and shift with the movement practices they document. Such an approach would foster a deep dialogue between movement practices, those undertaking the analysis, and the technologies used.

The aforementioned research projects (Stancliffe 2008; 2010a; 2010b) revealed limitations in notation's use in its intended format for documenting contemporary movement practices. There is a significant degree of labour in creating an 'accurate' translation of a choreographic work into a score and the notation is also not designed with an in-built flexibility to transmit work where the movement is not fixed in time and space. Following the labour of creating a notation score, there was then additional work to augment this translation with further analytic readings that reveal a particular insight into the work. Experimenting with annotating the notation score led to my interest in video annotation, and the focus of this thesis. It seemed that if a representation of a choreographic work could be easily created (i.e. video), then its augmentation (rather than translation) becomes a starting point. This interest coincided with a handful of research projects that have emerged since the late 1990s that have been exploring the potential of video annotation to give prominence to details of movement knowledge, resulting in the development of dance-specific annotation tools, including DancePro and Piecemaker, and multi-media publications (for example, Forsythe and OSU 2009, Forsythe et al. 2012, Motion Bank 2013, and Paxton and Contredanse 2008).

While annotation has gained currency in dance, it has not, until now, been treated as a phenomenon for focused research, and this is reflected in the limited discourse concerning the practice, and the meaning and value of annotation. Motivated by the infancy of video annotation as both a method of analysis and as a tool for the transmission of dance, a key research question of this thesis contemplates what annotation is and how it operates. While traditional codified notation systems strive for objectivity through a lens constructed from prescribed analytic and conceptual frameworks, video annotation does not appear to have a similar identifiable and sharable method. Further, there seems to be little consistency between research projects that feature annotation. This suggests that annotation is responsive to the research questions and ideas posed by the dance artist(s) and researcher(s) involved, helping to shape a personalised version to meet particular needs and thereby increase its utility and add value. I contemplate, therefore, whether the practice of annotation could be positioned as aspiring for metastability. In other words, to what extent is what is seen, analysed, interpreted, and understood about dance neither predetermined or limited but able to arise in dialogue with the movement practice or dance work and the skillsets of the researchers involved?

Despite gaining momentum, video annotation is not ubiquitous in studio practices and dance scholarship. A second goal of this research, therefore, is to establish video annotation as part of a larger trajectory of dance analysis. I consider what annotation offers above and beyond traditional codified notation systems, and the use of choreographic notebooks that are widely acknowledged to be valuable process-oriented tools in dance. Providing a context for the recent emergence of video annotation leads to me to consider whether video annotation, as a method of analysis and tool for transmission, has the potential to transcend the traditional readership for dance, beyond the specialist and expert viewer and towards heterogeneous audiences.

A final key research question of this thesis concerns the individual and collective knowledge of dance. It seems that annotation offers a viewpoint that is likely to inform future understandings and experiences of the dance. I ask whether annotation changes the way that dance is seen, analysed, interpreted, and understood, and how it ultimately impacts what is, and what can be, known about dance. I then contemplate how this might shape what is collectively known about dance.

The three research questions that motivate my research take video annotation as the primary focus, yet the detailed discussion of video annotation does not start until Chapter Six of this thesis. The reason for this is twofold. First, given that video annotation is not (yet) a common practice in dance studies and is in its infancy relative to tradition analytic methods such as dance and movement notation, it is necessary to provide a theoretical foundation through which the characteristics and functions of annotation might be understood. To do this, I introduce a philosophical framework that examines how thinking develops according to and along with the technologies with which we interact. In extending this framework to apply to dance studies, and thus the readership of this thesis, I am able to articulate how notational practices (i.e. writing and dance and movement notation) and annotational practice shape an individual's perception and understanding of an information source as well as the collective cultural memory of dance. This framework is important as it helps to account for how different kinds of documentary practices transform thinking and provides the basis, therefore, for the examination of video annotation later in the thesis. The theoretical foundation for this study also draws from literary studies and looks to accounts of how the annotation of books, using techniques such as marginalia (the notes that readers make in books) and underlining passages of text, creates an edited and personalised version of the text and transforms readers' engagement.

Outlining the editorial and transformative effect of annotation is important for contemplating how dance viewing is altered through video annotation later in the thesis. These philosophical and theoretical foundations, which are introduced in Chapter Two, provide an anchor for this investigation and for contemplating the mechanics, function, and value of annotation more broadly.

Secondly, it is important to recognise the context in which video annotation has emerged as both an analytic practice and as a method of transmission in dance. Dance has a rich heritage of documentary practices that contribute, in part, to what individuals and the dance community know and understand. Recognising the development of individual and collective ways of capturing and knowing dance is in keeping with the philosophical framework outlined in Chapter Two. In this study, I draw upon my expert knowledge of dance and movement notation practices to develop a trajectory of this analytic tradition. However, given the recognition that many artists and researchers today feel that notation is insufficient for their needs (see page 22-23) the examination of traditional notation practices in Chapter Four is crucial to account for the development of video annotation as a relatively new technological process. Furthermore, given the ubiquity of notebook use relative to the dance community's use of notation, I take time to consider how choreographic notebooks support thinking, an enquiry that comes before my examination of video annotation as a digital method in Chapters Six and Seven. The reader of this thesis is taken on a journey that shifts from describing, analysing, and considering analogue methods of documenting, processing, and transmitting movement and choreographic ideas (in the form of dance and movement notation and choreographic notebooks) to digital methods of analysing and transmitting dance and movement notation (video annotation). This journey intends to the recognise and highlight the significance of video annotation for dance studies today.

The emergence of dance research projects using annotation correlates with a more general interest in annotation in fields outside of dance, including digital studies (Hui 2016, Puig 2011, and Stiegler 1998; 2009a; 2014a), literary studies (Jackson 2001, Jackson 2005a, and Sherman 2008), and information science (Briet 2006, Dingli 2011, and Wright 2014). Given the limited discourse about annotation in dance, Chapter Two takes literature in these fields as the starting point for an ongoing dialogue between ideas about annotation and the research questions central to this thesis. I draw from the work of philosophers Bernard Stiegler (1998; 2009a; 2014a) and Walter Ong (2012) to contemplate how certain technologies, such as writing, support and extend the cognitive and intellectual capacity of the mind. Following Stiegler, I refer to these technologies as **mnemotechnologies** (or mnemotechnics). This creates a framework for articulating how practices of notation and annotation shape understandings of dance. The general understanding of what annotation is has strong ties to the notes that readers make in the margins of books (marginalia) and other mark-up techniques such as underlining or highlighting passages of text. Looking to these techniques provides an anchor for this investigation and for contemplating the mechanics, function, and value of annotation. Finally, Chapter Two contemplates the role of annotation in the organisation and navigation of knowledge and considers how the characteristics of individual practices could be used advantageously for the representation of dance and movement knowledge.

The qualitative methodology and emergent design of this thesis is introduced in Chapter Three, which also identifies the methods employed in this study. This includes a first-person perspective of video annotation to contemplate what the practice offers the experience of analysing dance, and to what extent movement thinking and knowledge **individuates** with and through annotation. I also adopt the perspective of the viewer encountering already existing annotations and analyse how this impacts my understanding of choreographic practices. The chapter also introduces the archival research conducted and the primary sources encountered to develop a context for discussing annotation in dance.

Chapter Four looks at a selection of dance and movement notation systems to show how ideas about documenting dance evolve over time to create a rich heritage and trajectory of analytic practices. I use the examples of Thoinot Arbeau's (1519–1595) Orchésographie (1925), originally published in 1588; the Beauchamp-Feuillet notation system published in 1700 and used throughout the eighteenth century; and Labanotation, Benesh Movement Notation, and Danscript originating in the early to midtwentieth century. I show how the capacity and limitations that characterise certain systems motivate a search for alternative notation methods to meet the needs and desires of a community of users. I also reveal that notational developments are not only technological but arise from social, financial, and organisational contexts. Subsequently, I propose that the evolution of movement thinking operates at both the level of the individual (individuation) and the wider dance community (collective individuation) as new and divergent ideas are documented to become part of collective knowledge. Thus, positioning notation as mnemotechnics provides a framework that accounts for how one's understanding, and the understanding of the dance community, develops with and through the analytic and conceptual parameters that different notational systems prescribe. This chapter lays the foundation for contemplating the reason for the recent emergence of, and interest in, video annotation as a method of analysis and tool for transmitting dance.

Chapter Five creates a bridge in my thesis between the analogue movement notation systems discussed in Chapter Four and video annotation in Chapters Six and Seven. I explore how artists' notebooks are used to support the development of ideas and movement practices in a way that is not restricted by pre-determined analytic and conceptual frameworks (as is the case for movement notation) and are not hampered by digital apparatus (as could well be the case for video annotation tools). This is because notebooks allow the artist to work within their own frame of reference and methods of representation, which may include codified or idiosyncratic forms of notation or other methods of externalising thoughts and ideas. In the chapter, I propose that notebooks are more than documentary tools; they have a different relationship to choreographic work than notation or annotation and are crucial in facilitating an iterative process that supports and extends the thinking relating to dance practice. To explore to what extent this is the case for a single choreographer, I analyse a collection of notebooks belonging to British dance pioneer Margaret Morris (1891–1980) and consider how techniques such as writing, drawing, and notation record ideas, thoughts, and observations in a way that might be said to support and extend thinking.

In Chapter Six, the notion of annotation as an editorial act—as offering a perspective on a source comes into play as I contemplate the extent to which annotation re-authors, enriches, and possibly distorts the content of video materials. This viewpoint implies that there are implications for how annotated video is 'read.' Four multi-media publications are selected for analysis: *Improvisation Technologies: A Tool for the Analytical Dance Eye* (Forsythe et al. 2012), *Material for the Spine: A Movement Study* (Paxton and Contredanse 2008), *Synchronous Objects for One Flat Thing, reproduced* (Forsythe and OSU 2009), and *Using the Sky* (Hay and Motion Bank 2013). In each of these, video is the primary source of documentation, and different kinds of annotation are used to articulate and transmit movement thinking and artistic philosophies. Through descriptive and comparative analysis, I interrogate what it means to engage with video annotation from a viewer's perspective and if there is any significance to how movement is read.

Chapter Seven focuses on the experience of video annotation. I position myself as an annotator and use DancePro and Piecemaker2 (PM2), two dance-specific tools, to annotate pre-recorded video footage and for the real-time annotation of a live creative process for a choreographic work. This allows me to contemplate the motivation for—and purpose of—video annotation, the benefits and challenges it presents for dance analysis, along with the attributes and function of different types of annotation. I hope to show that while video may have removed the need or desire to notate dance, annotation can support video analysis and advantageously exploit the rich visual data it contains. In

the chapter, three key themes are explored: the mechanics and experience of annotating video, to what extent annotation supports or extends understanding, and the value of annotation as an alternative method of analysis to notation.

Chapter Eight concludes this thesis by drawing together the findings of this study and argues for the potential of video annotation for the articulation and transmission of dance and movement knowledge. I repeat the key discoveries concerning the characteristic mark-up properties of annotation and how different spatial and temporal assets contribute meaning and value. I reiterate how different kinds of annotation function and the impact they have on understanding dance. I also restate the extent to which this might transpire as an individual and collective practice of individuation and its subsequent impact on dance scholarship. As well as identifying what I have uncovered in terms of new knowledge, I also identify the limitations of this study and, in light of these, make recommendations for future research.

CHAPTER TWO: LITERATURE REVIEW

Since the late 1990s, interest in video annotation has started to gather pace demonstrated by its use in a handful of dance research projects that have resulted in outcomes such as multi-media publications (for example, Forsythe and OSU 2009, Forsythe et al. 2012, Motion Bank 2013, and Paxton 2008) and dance-specific annotation tools, such as DancePro, Piecemaker2, and Rekall. Nevertheless, literature relating to dance annotation is not readily available because not much has been published; in fact, discussion of annotation is largely absent in dance research despite growing interest from researchers developing such dance tools and publications. On/Annotations (deLahunta, Vincs, and Whatley 2015a), an issue of Performance Research, is the first collection of literature dedicated to examining annotation in the performing arts. However, while it illustrates diversity in what might be referred to or conceived of as annotation, a clear understanding of what exactly annotation is and how it operates does not manifest. This chapter uses literature from other fields where there is a similar interest in annotation to start to address the three questions central to this thesis: What is annotation? How might it be situated as part of a larger analytic trajectory of dance? How does video annotation facilitate the individual and collective knowledge of dance? This approach of looking outside of dance studies enriches my enquiry and enables a sharper focus on dance as the primary field for a subject-specific investigation of annotation.

This chapter begins with a discussion of external memory supports (mnemotechnics) and their role in the formation of individual and collective knowledge. I then look to literature concerning the annotation of physical media, specifically books, to explore the ubiquity and value of annotation as a scholarly practice. I examine the extent to which discussions about marginalia might be applied to dance and, to expand what might be viewed as annotation, I make comparisons between static sources (such as images and text) and video as continuous media. I then position annotation as an editorial practice to consider how it shapes what is, and what can be, known about dance. The discussion then moves to the digital, where a selection of video annotation tools for dance are introduced. The focus in the second half of the chapter shifts to examine how knowledge is represented, organised, and collectivised through names and labels. While this perhaps fails to immediately conjure the image of annotation, it helps to delineate how annotation may support the circulation of different kinds of dance and movement knowledge in the digital milieu.

Mnemotechnics

Philosophers Walter Ong (2012) and Bernard Stiegler (2014a) propose that handwritten alphabetic

writing is the most important technological development in the history of humankind.¹² Stiegler declares that writing revolutionised the way that society conducted itself and made possible the birth of rational knowledge, from which geometry and public law became possible (2014a). According to Ong, dialects are transformed when there is a "deep commitment to writing" in a way that exceeds what is possible for purely oral dialects (2012: 8). He writes,

Print eventually removed the ancient art of (orally based) rhetoric from the centre of academic education. It encouraged and made possible on a large scale the quantification of knowledge [... and] produced exhaustive dictionaries and fostered the desire to legislate for 'correctness' in language. (Ong 2012: 127-128)

Ong asserts:

Oral cultures indeed produce powerful and beautiful verbal performances of high artistic and human worth, which are no longer even possible once writing has taken possession of the psyche. Nevertheless, without writing, human consciousness cannot achieve its fuller potential, cannot produce other beautiful and powerful creations. In this sense, orality needs to produce and is destined to produce writing. (2012: 14)

As stated by Ong, writing, which is a "commitment of the word to space, enlarges the potentiality of language almost beyond measure," extends the cognitive and intellectual capacity of the mind and transforms human consciousness (2012: 7-8, 77, 81).

The spatialisation of words onto the page is a process that Stiegler refers to as grammatisation, a

the process whereby the flux and flow networking our existences become discreet elements: writing is thus, as the breaking into discreet elements of the flux of speech (let us invent the word "discretisation" for this possibility), a stage in grammatisation. (2006: 1)

In other words, grammatisation is "the process of describing and formalizing human behavior into letters, words, writing, and code so that it can be reproduced" (Stiegler n.d.). Recording technologies are techniques of grammatisation that make information and knowledge available for study and critique.

Ong and Stiegler look to *Phaedrus* (c. 370 BC), written by Greek philosopher Plato (c. 428–348 BC), which is a dialogue between the Greek philosopher Socrates (c. 470–399 BC) and aristocrat Phaedrus (c. 444 BC–393 BC) concerning love, rhetoric, and the dialectic. In this dialogue, writing is positioned as inferior to *anamnesis* (reminiscence) and *logos* (reason) and described as "barren" and a "dead

¹² The origins of writing and the alphabet and its impact on society and thinking has been examined by scholars including Johanna Drucker (1995), Steven Roger Fischer (2003), Roy Harris (1986; 2000), Ivan Illich and Barry Sanders (1998), and Ong (2012).

discourse" (Plato 370 BC in Hamilton and Cairns 1961: 521-522). Plato has Socrates explain that written words,

seem to talk to you as though they were intelligent, but if you ask them anything about what they say, from a desire to be instructed, they go on telling you just the same thing forever [...] when it is ill-treated and unfairly abused it always needs its parent to come to its help, being unable to defend or help itself. (Plato 370 BC in Hamilton and Cairns 1961: 521)

The fixed written text, in other words, results in an author and a text that is unresponsive, cannot defend itself, or evolve in the way that spoken discourse can. Despite the distrust of written discourse, Ong asserts that "Plato's philosophically analytic thought [...] was possible only because of the effects that writing was beginning to have on mental processes" (2012: 79).¹³ In other words, thinking became philosophical through writing, because writing supported memory and advanced the intellectual capacity of the mind, helping humans to reach a greater potential.

Ong and Stiegler argue, however, that there is a drawback to the use and reliance on writing, which creates a form of prosthetic memory. Writing was feared to weaken the mind and create the illusion of thinking because it would mean that individuals rely less on their internal or biological memory (Ong 2012: 78-79 and Stiegler 1998: 3). Ong proposes that the artificial and manufactured tradition of writing weakens the mind and contaminates, even destroys, memory in "pretending to establish outside the mind what in reality can only be in the mind" (2012: 78).

The fear that writing would lead to forgetting and hence stupidity, Stiegler argues, was not unfounded. What an individual is able to retain, "insofar that is it finite, is caught in the dynamic that a technical tendency determines" (Stiegler 1998: 17). Stiegler uses the term *retentional finitude* to refer to humankind's limited retentional capacity in accordance to the reliance on mnemotechnics (1998: 17). Paradoxically, an individual's forgetting and the resulting loss of knowledge is a direct consequence of mnemotechnical tools (Ong 2012: 80). Writing can, therefore, be said to balance the negative (the failing of human knowledge, or retentional finitude) with the positive (advancement of knowledge). This paradox, to weaken *and* support memory, is what Stiegler, following Plato, refers to as a *pharmakon*—something that exists as both a poison and a remedy (2014a).¹⁴

¹³ According to Ong, when writing was first introduced in ancient Greek culture, it was a trade practiced by craftsmen who were employed to write (2012: 93). "Only around Plato's time, more than three centuries after the introduction of the Greek alphabet," writing was a common enough practice in the "Greek population and interiorized enough to affect through processes generally" (Havelock 1963 in Ong 2012: 93).

¹⁴ Philosopher Jacques Derrida explores Plato's pharmakon in *Dissemination* (1981), first published in 1972.
While the discussion of mnemotechnics usually considers writing, print, or computational media, systems of dance and movement notation might also be included. Philosopher Nelson Goodman (1976: 131) describes a notational system as "Any symbol scheme [that] consists of characters, usually with modes of combining them to form others." As combinatorial symbol-based systems, dance and movement notation, which create an analytic record of choreography, are the closest things to an alphabet for movement. Notation is a process of grammatisation where the temporal and spatial properties of dance are transformed and stabilised to create a score, making it possible for dance to circulate amongst a community of users. Dance and movement notation thus contribute to what is collectively known about dance. On a more expansive scale, the collective artificial memory of dance is perhaps most tangibly conceived as the archive in the traditional sense, which is comprised of the material artefacts it contains. What is interesting about Stiegler's thesis is that his view of mnemotechnics moves beyond the realm of material objects to contemplate developments in thinking.

Similarly to alphabetical writing, I argue that notation transforms and advances the intellectual capacity of its user. It is formative in the development of knowledge. Cognitive scientists Robert Wilson and Andy Clark (2009: 64) propose that mathematical notation, for example, "does not simply feed existing mathematical abilities—although it does do that, to be sure—but also builds on those abilities to produce an agent with significantly greater mathematical capacities." This makes it possible to argue that mnemotechnics "are not simply used by agents with given cognitive abilities but significantly augment the cognitive abilities that those agents possess" (Wilson and Clark 2009: 64).

According to Stiegler (2014a), how humankind is constructed with and through mnemotechnics is a key philosophical question of our time, and he analyses both how our present is informed by past experience and the implications of digital technology as a means of storing and accessing information. Following philosopher Edmund Husserl (1964), Stiegler proposes that the "now of temporal flow" is constructed by the assemblage of **primary retentions** (sense perceptions) which is conditioned by what an individual has retained in the course of prior experience (**secondary retentions**, former primary retentions that are now part of the past), which itself is determined on the basis of their retentional criteria and what they anticipate or expect to see in future experiences (**protention**) (2014a).¹⁵ This is what Stiegler, building upon Simondon, refers to as *psychic individuation* (2006: 7). Subsequently, each individual attends differently to the now because they have different memories

¹⁵ In accounting for perception of events or temporal objects, Stiegler positions Husserl's concept of 'primary retention' as "one of the major concepts that has allowed for the philosophical advances of the twentieth century" (2009b: 46).

composed of secondary retentions (Stiegler 2014a). This concept is important for my thesis, because Stiegler (2006) identifies that retentions and protentions "can become collective via **tertiary retentions**", or mnemotechnics. He proposes that mnemotechnics enable an individual's secondary retentions to become collective secondary retentions when psychical and temporal events are spatialised to create technical artefacts (Stiegler 2014a). It is through these artefacts that we have access to collective secondary retentions, or collective memories. This is a compelling framework for examining the emergence of different kinds of knowledge and understanding through notational and annotational processes and their resulting artefacts in dance.

Stiegler argues that primary retentions "are overdetermined by the factical and prosthetic conditions under which the now can have access to its already-there that is past and secondary" through mnemotechnics (2009b: 46).¹⁶ In other words, mnemotechnics, which might be written texts, notation scores, videos, or artefacts stored in the computer, provide access to a past that one has not lived. It provides access to other people's secondary retentions that are integrated into the experience of seeing. If understanding is shaped by the inheritance of analogue and digital artefacts and documentary practices, it becomes possible to contemplate how different methods of grammatisation, such as notation and annotation, shape what is, and what can be, known about dance. Furthermore, if consciousness, as Stiegler posits, is constructed through the results of prior experience that is overdetermined by mnemotechnics, people engaging with dance will be differently influenced by their knowledge-base and expertise, skill-level, and perspective taken. This is because the primary retentions that become secondary retentions and then collectively available as tertiary retentions are only selections of a given phenomenon. It becomes interesting, therefore, to explore documentary and analytic traditions in dance and their role in how dance is seen, analysed, interpreted, and understood.

With reference to the evolution of technologies, Stiegler posits:

In the course of a historical period, a system is constituted as a stabilization of technical evolution around previous acquisitions and structural tendencies determined by a play of interdependencies and inventions complementing one another, in relation to other dimensions characteristic of a particular historical period. (1998: 29)

¹⁶ The concept of the 'past already-there' is central to Heidegger's *Being and Time* (1962) which shifts from Husserl's phenomenology towards a focus on the non-lived past. Stiegler claims that Heidegger is unable to fully break from the Husserlian phenomenological concept of time, because he does not separate primary, secondary, and tertiary retentions and because he does not acknowledge retentional finitude (2009: 9). Stiegler believes that the, "Heideggerian analysis of modern technics cannot account for contemporary technics" as it excludes tertiary retentions (Stiegler 2009a: 9; 2014b: 46).

This resonates with the following statement written in the 1980s by Hutchinson Guest:

It is very probable that somewhere an ardent enthusiast is busy inventing yet another system with which to record movement. Perhaps I should say "re-inventing" for it is most likely that the ideas chosen will be similar to ones already put forward in the near or distant past. (1984: xi)

Hutchinson Guest's description of notation systems as 're-inventions' depicts a heritage of ideas that are recycled resulting in an iterative process of grammatisation. This helps us to understand a lineage or ecology of mnemotechnics whereby ideas, ideologies, and apparatus develop, spring-boarding from, and in dialogue with, already existing methods (previous acquisitions) and evolving in response to the demands of the dance community. In other words, a **technical transindividuation** has enabled the accumulation of dance and movement knowledge over time. This concept is explored in more detail in Chapter Four, which explores how notational innovations do not develop in isolation but rather as part of a larger connected heritage.

Stiegler (1998: 152-153) offers a non-anthropocentric perspective towards technology whereby the "prosthesis is not a mere extension of the body" but the constitution of being human. The individual and the technology are co-constituted, meaning that their use supports both the advancement of the individual and the advancement of the technical (Stiegler 2009a: 6-7). This is a **transductive** process, a concept borrowed from Simondon, meaning that "knowledge is not grounded on the side of the subject any more than it is on the side of the object" (Combes 2013: 7) but is constructed through the their relationship between the subject and object. In other words, knowledge is co-constructed in a space between the two. This concept becomes important for this study into video annotation as it helps to account for how the viewing, analysis, interpretation, and understanding of dance evolves with different technologies and how these technologies, in turn, have evolved.

Physical Media: Marginalia

Despite the ubiquity of visual sources and moving images that pervade our engagement with the physical and digital world, text remains the "privileged vector of knowledge and consequently of individuation" (Puig 2011: 2).¹⁷ This applies both to individual and collective individuation in so far as it unites singular experiences and understanding, as arising from primary and secondary retentions, through mnemotechnics that create a chain of knowledge that is accessible to a community of peers becoming, therefore, collectivised (Stiegler 2014b). Stiegler proposes that different kinds of

¹⁷ According to Vincent Puig, Executive Director of the IRI/Centre Pompidou, 80% of web resources in 2010 were audiovisual materials (2011: 2).

mnemotechnics transform reading practices and **transindividuation** processes. He cites, as an example, the emergence of newspapers in the nineteenth century whereby knowledge was no longer transmitted, rather information and entertainment instead (Stiegler 2014b). The format of delivery and the type of information that is available ultimately conditions individuation and thus collective knowledge.

Given the dominance of the written word, the historical use and treatment of books is of anthropological and philological interest, and the analysis of how people interact with these artefacts helps to inform us of how they shape understanding. In this section, I look to accounts of how readers annotate books, a practice known as marginalia,¹⁸ as one of the ways that people interact with text. I contemplate how annotation impacts the reading experience and whether any frameworks emerge that can be applied to the discussion of video annotation in dance. I predominately draw from Marginalia (2001) and Romantic Readers (2005a), written by Heather Jackson, a scholar of eighteenth century and Romantic literature who focuses on marginalia from 1700-2000 and 1790-1830, respectively, to "test current assumptions about the potential value of readers' notes" (2001: 6). I also reference Professor of Renaissance Studies William Sherman's Used Books, which is an empirical study of the "vast archive of information about the lives of books and their place in the lives of their readers" and presents an analysis of annotations in more than 7500 English Renaissance books between 1475 and 1640 (2008: 151, xii). The work of the former curator of rare books at Harvard College Library, Roger Stoddard (1985); the founding editor of the Journal of Information Ethics and expert in the history of books, Robert Hauptman (2008); and Shakespeare scholar Stephen Orgel (2015) is also referenced to interrogate what readers' marginalia, which Jackson refers to as a "familiar yet unexplained phenomenon" (2001: 4), might disclose about the inner life of readers.

Marks in Books (1985) is an exhibition catalogue "devoted to those mysterious traces left in books by printers, binders, booksellers, librarians, and collectors," compiled by Stoddard (Harvard University Press 2017). *Marks in Books* reproduces 64 different types of markings. Some of these speak of historical manufacturing processes indicated by the inky fingertips of printers, marks that demonstrate a cast-off copy, and binder's marks. Others, according to Stoddard, are traces "telling of human relations, and suggestive of human thought" (1985: 1). *Marks in Books* is described as having "coincided with a new phase in the history of reading as a proper discipline in which readers' marks

¹⁸ According to Jackson (2011: 13), *Marginalia* is the term coined by poet and literary critic Samuel Taylor Coleridge (1772-1843) when he started to publish his writings in the margins as contributions in their own right in 1819. Although the practice existed long before Coleridge's time, he is known as a master annotator, and people would lend him their books with the intention that he would leave his mark in them (Jackson 2001: 7).

featured as a source of evidence for a wide range of practices" (Sherman 2008: xi). The practice of marginalia is not new. In fact, it can be traced as far back as the Medieval Period when it was thought to have been a useful scholarly intervention, and readers were expected to customise their books (Fajkovic and Björneborn 2014: 902 and Sherman 2008: 160). However, the analysis of this intervention is comparatively recent and, as Stoddard suggests, is thought to provide insight into the inner life of readers and thus developments in literacy and reading practices over time. The interest in marginalia, Orgel argues, has resulted in, "a revolution in bibliographical studies which has involved noticing what had been unnoticeable and finding evidence hitherto irrelevant" over the past twenty years (2015: 2).

Jackson's and Sherman's interest in Renaissance and Romantic readers is not arbitrary. The invention of the Gutenberg press c. 1440 and the mechanical press in later years triggered an era of mass communication where an increase in the diversity, availability, and affordability of texts resulted in increased literacy levels¹⁹ and, therefore, more readers; Jackson reports that marginalia "are rare before 1700 and increasingly common (in relation to other forms of annotation) thereafter" (2001: 15). Prior to the printing press,

When books were manuscripts, laboriously written out one at a time, there could be no security of identity between original and copy; and even when a number of copies were made from the original, there was a practical certainty that there would be no absolute uniformity amongst them. (Allen 1914: 258)

However, the invention of printing as a mechanical method of reproducing manuscripts meant that the human errors in printed texts were overlooked by many (Allen 1914: 160).²⁰ Annotation was a tool for improving texts and correcting errors and adding useful information in the form of marginalia was linked to learning and remembering.

An extract from *The Library*, a poem written in 1781 by English poet George Crabbe (1754–1832) and cited by Jackson (2001: 53), gives insight into annotation practice:

¹⁹ Jackson also suggests, however, that a rise in literacy levels was correlative to an increasing population and "the spread of the desire to exercise the ability to read" (2005a: 7).

²⁰ According to Percy Stafford Allen, author of *The Age of Erasmus*, the necessity of "seeking a good text and correcting the proofs" in the transition from manuscript to print culture was not initially perceived (1914: 261).

Page after page, the much-enduring men Explor'd the deeps and shallows of the pen; Till, every note and every comment known, They mark'd the spacious margin with their own; Minute corrections prov'd their studious care, The little Index pointing told us where; And many an emendation prov'd the age Look'd far beyond the rubric title-page.²¹

The Library relays an account of deep reading that might be foreign to many readers today. Annotations were created with the expectation that they would be read (Jackson 2001: 61). Crabbe's account, describing annotations as arising from "studious care," challenges assumptions that they are spontaneous and uninhibited responses to the text. According to Jackson, annotations

were not [...] the secret utterances that they have for the most part become, but semi-public documents [...] These notes were designed for use, for show, for persuasion; they were oriented towards others, not the self. (2005b: 145)

Jackson suggests that expressions of opinion through marginalia are relatively recent, a practice of the modern reader, and are historically rare, overlooked in favour of "cumulative scholarship" (2001: 50). Jackson proposes that readers today usually consider their annotations to be private and idiosyncratic, despite being "consistent with centuries of traditions reaching far back beyond the birth of print" (2001: 5). The format of books has changed little since their invention, so it is unsurprising that annotation is still part of active reading,²² although Ong suggests print transformed reading from a social to a private activity:

It produced books smaller and more portable than those common in a manuscript culture, setting the stage psychologically for solo reading in a quiet corner, and eventually for completely silent reading. (2012: 128)

Historically, reading was a primarily collective activity but in modern history it is considered an individual, and sometimes intimate, practice (Ong 2012: 128 and Puig 2011: 2) where interpretations of the text started to be shaped by an individual's own criteria (Fischer 2003: 205). Notwithstanding this, Jackson asserts that this shift is less about the psychology of reading and more about the availability of books and the politics of possession (2001: 50).

The Spatial Contextual Property of Marginalia

According to Jackson, the value of annotation as a necessary part of reading was recognised in the

 ²¹ In reading of the full poem, Jackson states that Crabbe implies "that nobody was annotating anything anymore," blaming low-end publishers for "a general loss of concentration and readerly stamina" (2001: 52-53).
²² Some Digital Humanities scholars are contemplating the future of the book in the digital and networked milieu. See UAL (2015), Deegan (2017), and Deegan and Hayler (2016).

design of the physical book. Until the middle of the 19th Century it was common practice for readers to have their books bound to specification, for example, a text interleaved with blank pages was a popular format for accommodating readers' notes and "seems to have been routine for students" (Jackson 2001: 34).²³ Providing blank pages at the back of printed books is a traditional practice (Jackson 2001: 33) that lives on today. Subject-specific accommodations in the design of the physical book could also be observed. Greek and Latin books, for example, were printed with additional space between the lines of text to allow for readers' translations, and law books were printed with wide margins for copious marginalia (Jackson 2005a: 33). These accommodations helped to overcome the limitations of space on the printed page and provide room for readers to work with their books.

Different spaces on the printed page lend themselves to different annotative functions that are indications of the kind of reading activity undertaken. Margins are preferred for readers' commentary which ranges from "hasty marks to extended essays" (Jackson 2001: 27-28). Writing short phrases in the margin is less of a distraction from the task of reading than fully formed sentences or longer prose, for example, that require more time and attention. The blank space at the top of the page is commonly used for noting key points or for summarising or paraphrasing the text, while the bottom of the page is reserved for footnotes but can be used as an overspill space for marginalia (Jackson 2001: 27). According to Jackson, these spaces are indicative of a lesser or greater distance from the source. Writing between lines of text, which usually functions as translations, creates the least amount of distance, because, although the words are different, they aim to be as close in content to the original as possible. Summarising notes indicates more autonomy on the behalf of the reader and, therefore, greater distance from the source (Jackson 2001: 42).

If the physical distance from the content of the source is indicative of autonomy and psychical distance, then annotations created as a separate record to the original (i.e. notes) are likely to create the greatest psychical distance. There seems to be a crucial difference, however, between making notes on a source (annotation) and making notes as a separate record (note-taking) in terms of the functions they serve and the contextualisation that arises. Annotations are usually a direct response to the source and help to develop understanding, while notes, in contrast, intentionally isolate, abstract, and remove information from the source to be consulted as records in their own right at a

²³ Jackson explains that, until recently, interleaving was readily available. Interleaving is where a blank page faced every printed page (Jackson 2011: 33).

later date. Jackson summarises this well in discussing the tendencies of poet Samuel Taylor Coleridge:²⁴

Coleridge used the margins of his books alternately with his notebooks, the margins serving the short-term need for rapid response—to get down an idea as it arose and the notebooks serving longer-term purposes such as storing extracts and working up those first thoughts. (2005b: 140)

This indicates that marginalia serve in-the-moment thinking while notes support processes of documentation and reflection. Differentiating between annotation and notes establishes a reliance (or not) on contextualisation to the source. For annotation, having the original source alongside readers' notes "stands as a reminder of the source and a corrective check on the interpretation" (Jackson 2001: 88). Losing the spatial relationship between the source and the annotation is to lose the context of the readers' marking. Subsequently, I propose that note-taking can be positioned as annotative activity in the moment of their creation and can continue to be classified as such until separated from the source.

Catherine Marshall, a former researcher for Microsoft, observed a correlation between disciplinary requirements and approaches to annotation. In other words, certain kinds of information encourage particular mark-up techniques. In an empirical study of student textbooks (1997 and 1998), Marshall sought to identify the mechanics of annotation to support the development of hypertext systems. Marshall observes that annotations are "rarely consistent with the aesthetic look of the book; they are visually set apart from the published text" (1997: 138), an important characteristic. She found that mathematics attracted notational annotations close to equations that show the student's thinking and calculations, whereas, "Philosophy texts, with their oftentimes dense narratives, are particularly prone to page after page of highlighting or underlining" as a method of following complex concepts (Marshall 1997: 135-137). This is an opportune moment to identify that books about dance can be annotated using techniques such as underlining; however, the focus of this thesis is the annotation of continuous media (i.e. video) and an examination of the kinds of mark-up techniques that this attracts. Nevertheless, the discussion of marginalia provides a valuable, albeit limited, framework for contemplating the mechanics of annotation.

²⁴ Coleridge occupies a "pivotal position" in the history of marginalia in England, and this is reflected in the British Library's purchase of a large number of his annotated books in 1880 and a second collection in 1953 (Jackson 2001: 7-8). Other renowned annotators include Herman Melville (1819–1881), author of *Moby Dick;* poet William Blake (1757-1827); and poet John Keats (1795-1821) (Jackson 2005b: 138).

"Dirty Books"

The ubiquity of marginalia implies that readers implicitly understand how to mark-up sources: "The broad divide is between note-taking of the kind represented between heads and translations, and the bolder activity of book improvement" (Jackson 2001: 46). Jackson describes annotation as part of educational theory and uses the Renaissance humanist Erasmus (1466–1536) as an example. In describing how to study, Erasmus advised that brilliance in an argument or style, or information worth committing to memory, "should be indicated by some appropriate mark [... that] will immediately indicate their purpose" (1511 cited in Jackson 2001: 48). Nevertheless, not all agree with the practice of altering texts through annotation, indicating that it is a divisive practice. Philosopher John Locke (1632–1704), Jackson (2005a: 61) explains, argued against annotation and "insisted that the point of reading was to improve the mind by exercise of its own powers." Writer Samuel Johnson (1709–1784), described as one of the first literary critics, expressed his disapproval of marginalia, claiming it to be a poor substitute for intellectual engagement and neither an adequate critical response nor effective memory aid (Brown and Considine 2012: 5-6).

Further to educational theory, the act of marking-up cultural artefacts was also divisive. The desire to preserve cultural heritage in the eighteenth and nineteenth centuries, Sherman reports, led to "the cult of the clean book," which sought to restore "dirty books" to their former glory by eradicating the traces of readers by erasing and cutting out annotations, bleaching the pages of books, or trimming the margins (2008: 151-178 and 163-164). According to Jackson, at this time, "As a social custom, writing in books was in a transitional state, but for the most part it was accepted as a privilege of ownership and, under the right circumstances, a good thing to do" (2005b: 138). Sherman proposes that the desire for clean books informed "both the ethics of possession and the etiquette of use" (2008: 155) associated with the emergence of circulating and institutional libraries when annotation shifted from an expected practice to strictly the privilege of book owners, and readers using subscription libraries were asked not to write in books (Jackson 2005a: 45 and Sherman 2008: 157).

Orgel describes the restoration of books to remove annotations as "one of the strangest phenomena of modern bibliographic and curatorial psychology" (cited in Sherman 2008: 155). The ideal copy, or the "honest book," Sherman explains, is a "paradox that is all too familiar to museum curators and art conservators, a historic object with most of the traces of its history removed" (2008: 164), and there are "significant implications for those who collect, preserve, and study the books that come down to us from the past" (Orgel cited in Sherman 2008: 155). Far from creating an honest book, I propose that eradicating readers' traces creates a dishonest book, covering up its past and pretending the book

has not been read. In the recent past, efforts have been made to preserve collections of books containing marginalia as historical evidence of thinking and ideas from an earlier time. Jackson cites the example of The British Library's purchase of a heavily annotated copy of Italian polymath Galileo Galilei's (1564–1642) *Istoria e dimonstrazioni intorno alle macchie solari* (1613) in 1998. Although the annotations had not been studied and the identity of the annotators were unknown, they are thought to provide rare evidence of a seventeenth century perspective on Galileo's work (Jackson 2001: 2). Such a perspective is rare, because historical evidence of this era is scarce and also because of the aforementioned book restoration efforts.

Annotations as Tertiary Retentions

Jackson describes readers' markings as a potential "goldmine for scholars" and proposes that "even the briefest and most impersonal supplement to a work of reference can tell us something about the state of mind of the reader who wrote it" (2001: 6 and 2005a: 250-253). However, the analysis of annotation offers only indirect evidence of how readers appropriate text (Jackson 2005b: 148), and what can be understood is partial at best. Jackson suggests that,

the situation in which a reader takes up a book is different from that in which a reader just reads; the annotating frame of mind changes the conditions of reading and subtly alters the experience. (2005a: 250)

In other words, to annotate is more than to just read. It is to engage with the source in a particular way. A similar understanding is proposed by Marshall who writes,

Readers don't just read. They commune with their documents. They wander, collect, organise, interpret, mark in, and mark on what they gather. The degree to which these annotations are writing in their own right forms a dimension. (1998: 41)

Here, Marshall brings attention to the reader-as-writer making it possible to understand that annotation introduces a voice to the source that is other than the original author's. This might be unintentional, simply part of the annotator's reading experience, or an intentional activity. English poet William Blake (1757–1827), for example, appropriated texts and "marked certain selected books quite deliberately as a way of spreading his views" (Jackson 2005b: 139). "Annotated copies seem fairly commonly to have circulated under the reader's name, often as contributions to an ongoing controversy" (Jackson 2005b: 139), suggesting that re-authored sources can be used to publicise critiques of works.

Marshall observes that "immersed in a text [... readers] seldom make [annotation] more explicit than that which is required for the task at hand," which can create difficulties for interpretation without first-hand access to the marginalia's creator who might be able to provide context for their markings (1998: 41). In other words, the reader annotates the source with only as much information as is necessary. The spatial contextualisation between the source and the annotation provides a pathway that might support the analysis and interpretation of annotation. However, Marshall's observations suggest that it is not always possible to recover the meaning and value of annotation without additional information or clarification from the reader. It seems that when annotations are used to support or develop thinking or understanding, therefore, they are necessarily incomplete and do not represent fully concretised thoughts or ideas.

Marginalia: A Bifurcate Practice

The discussion of annotation has, so far, focused on readers' annotations, which is just one particular kind of annotation. Hauptman identifies that

The taxonomy of marginalia is bifurcate: In the first instance, an author or someone else such as an editor, commentator, or translator affixes a note to the margin of a text at the time of inscription of a manuscript or publication. (2008: 71)

This suggests that marginalia can be thought of as more than a readerly contribution, but authorial annotations may help to shape a source.²⁵

The author or editor may annotate a source if they wish to control how it may be interpreted. For example, Jackson (2001: 51) writes,

In England in the sixteenth century [...] Writers, the book trade, and government itself were all aware of the risks involved in sending books into the world with no guidance for the reader. The widely adopted solution was to provide printed commentary in order to control the reader's efforts of interpretation.

Controlling interpretative activity in this way was thought to eradicate "humanist annotation" and techniques such as indices were utilised (Jackson 2001: 52). Yet, annotations created by the author of the work are described by Jackson as "of limited interest, as a rule, to anyone but the producer," because they betray "methodical habits and [...] the process of composition" (2001: 13, 14)—or, in other words, the editorial steps taken towards finalising a manuscript. However, authorial annotations should be of great interest if they are used to impose or control interpretation, to mitigate readings beyond the author's intention.

²⁵ Relevant here in relation to a broader and more extended video of textual annotations is Gérard Genette's proposition of the *paratext*. In his book *Paratexts: Thresholds of Interpretation* (1997) Genette examines textual devices and signs of authorship, such as prefaces, notes and titles, which function to influence the reader, reading practices, and reception of the work. Genette explores the "spatial, temporal, substantial, pragmatic and functional characteristics" of *paratexts* (Genette 1997: 4): the "literary and printerly conventions that mediate between the world of publishing and the world of text" (Macksey 1997: xvii).

While authorial annotations may initially appear less intriguing than readers' marginalia, delving into the history of formal annotations, such as footnotes and endnotes, notifies us of a rich technological heritage. Hauptman observes that footnotes originated in early Medieval marginalia that "began in the margins, circled down to the bottom of the page and then curled back up on the other side, seeking empty space wherever it was available" (2008: 79-80). Then, "from the advent of printing in 1455 through to the sixteenth century," marginalia were printed with the text (Hauptman 2008: 94). Finally, in the early eighteenth century, marginalia were transformed into footnotes "to the virtual exclusion of other printed forms of annotation" (Jackson 2001: 55).

According to Jackson, the "essential and defining character of the marginal notes throughout history is that it is a responsive kind of writing permanently anchored to written words" (2001: 81). The transformation of marginalia into footnotes creates a visual statement that is suggestive of their relative importance to the text, further heightened by locating the annotation to smaller typeface at the bottom of the page. Footnotes, then, take on a different function, becoming part of a navigational system that directs readers away from the main text and toward appendage arguments. Today, many publishers prefer endnotes to footnotes (Zerby 2002: 2), yet this forges greater distance between the content of the source and auxiliary information, which requires the reader to work harder to follow the pathway.

There are obvious limitations in drawing upon literature about marginalia for the discussion of dance annotation and there are crucial differences in the kinds of annotation that are explored later in this thesis which pose a challenge for a universally-applicable conceptualisation of annotation. A key difference is that books and dance artefacts circulate differently. Books circulate widely in multiple forms, so the readership is generally much wider. Dances circulate in quite different ways: audiences usually have to attend live dance performances presented at a certain time and in a particular space, or they may view choreographies on-line in live or pre-recorded formats. Notation scores, as a record of choreographic work, are reserved for expert audiences, e.g. those who have the skills to translate their content and are stored in archives or libraries and/or behind a paywall, often with limited access for copyright reasons. For the annotation of books and digitalised text documents the stability of the source is assumed; thus, the discussion of annotation is relatively straightforward in comparison to dance, which cannot be studied at length unless a tangible representation (such as a notation score or video recording) is made. Given that the dominant focus of this research is video annotation, however, I circumnavigate the discussion of liveness and what dance is to focus on the augmentation of tangible dance records. This is not problematic given that it is only now that annotation in dance is developing traction due to the possibility of storing and cataloguing time-based processes in computers.

Beyond the materiality of the source, different intentions in reading print sources and in 'reading' dance need contextualisation. In the present day, book reading is understood to be a primarily solo endeavour, the reader and annotator are usually one and the same, and annotation is a tool for active reading that helps further understanding of the text. In comparison, the annotation of dance appears to extend an understanding what the source *is* and of the 'language' of dance rather than what it comprises. The analysis of dance annotations in this research does not intend to seek to gain insight into the inner life of the annotator or reader but focuses on what can be uncovered through annotation about choreographic practice and movement thinking. The study of annotation, therefore, necessitates a discipline-specific approach to establishing discourse and establishing what dance annotation looks like.

Multi-Media Publications

The characterisation of annotation as a corrective and editorial practice, an activity that alters the reading experience, and something that can be undertaken by the reader or author of a source is particularly useful for this research. Since the late 1990s, multi-media publications have emerged that use authorial kinds of annotation to guide the viewer in how to engage with dance. These include the DVD-ROMs such as *Improvisation Technologies* (Forsythe et al. 2012) and *Material for the Spine* (Paxton and Contredanse 2008) and websites such as *Synchronous Objects* (Forsythe and OSU 2009) and *Using the Sky* (Hay and Motion Bank 2013). The annotations in such sources exist as part of the fabric of the source, as opposed to those created by a reader or viewer, and have the potential to transform how dance is seen. Such publications—referred to as *choreographic objects* by anthropologist James Leach, dance researcher Sarah Whatley, and dance researcher Scott deLahunta (2008-2018)—aim to demystify dance for the viewer by "bring[ing] choreographic ideas and processes into newly productive exchanges with both general audiences and other specialist knowledge areas."²⁶ Video annotation is one method that is used to do this.

²⁶ Choreographic Objects: Traces and Artefacts of Physical Intelligence focuses "on the output of four research teams working in collaboration with the choreographers William Forsythe, Siobhan Davies, Wayne McGregor, and Emio Greco | PC" (Leach, Whatley, and deLahunta 2008-2018). Forsythe uses the term *Choreographic Objects* to denote "the understanding of potential instigation and organization of action to reside" (2008). Forsythe suggests that, *choreographic objects* "would [ideally] draw an attentive, diverse readership that would eventually understand and, hopefully, champion the innumerable manifestations, old and new, of choreographic thinking" (2008). For an examination of choreographic objects, see Blades (2015a).

Improvisation Technologies

Improvisation Technologies was first published in 1999 following interest from research fields outside of dance, including from the *Massachusetts Institute of Technology* (Zuniga Shaw 2017: 104). It is a streamlined version of the digital dance school *Self Meant to Govern* (1995), which was designed for Forsythe's company dancers who did not have the time to study his technologies in rehearsal (Sommer 2012: 13 and Ziegler 2017: 41-51).²⁷ As the full title suggests, the CD-ROM²⁸ is "a tool for the analytical dance eye" and introduces and describes a selection of Forsythe's "technologies" for movement.

Forsythe started his career as a dancer with the Joffrey Ballet and later danced for the Stuttgart Ballet, where he became Resident Choreographer in 1976 (Forsythe n.d.). He was the Artistic Director of Ballet Frankfurt from 1984 until its closure in 2004 before founding The Forsythe Company, where he was Artistic Director until 2014. Forsythe became inspired by Laban's writings on Choreutics during his rehabilitation from a knee injury, which became a stimulus for his "own method of generating choreographic material" (Driver 2000: 11). Forsythe explains that "ballet dancers are taught to match lines and forms in space" and instead "trains his dancers to picture trajectories and trails either left behind or implied by their movements in space" (Forsythe and Kaiser 1999: 64). Moreover, Forsythe manipulates and transforms the invisible geometry of traditional ballet vocabulary to generate original movement content (Forsythe and Kaiser 1999: 64). Digital artist Chris Ziegler, who created the annotations in *Improvisation Technologies*, reports that links between Laban's theories and Forsythe's practice were made in *Self Meant to Govern* but were excluded from *Improvisation Technologies* because of the limited spatial capacity of CD-ROMS (2017: 45). This means that a crucial link to the thinking behind Forsythe's practice is missing, though the link is potentially visible for scholars versed in Choreutics.

Improvisation Technologies is, arguably, the most well-known example of video annotation in dance. Graphical annotations created after filming are used to notate and make visible the body's geometric inscription of space as well as Forsythe's thinking. These annotations are deceptively simple (Zuniga Shaw 2017: 104), but their creation involved more than just drawing on top of video. The graphical editors (Ziegler, dancer Nik Haffner and Yvonne Mohr) worked with Forsythe and his company dancers to identify what details to draw attention to and the way in which this was to be done (Sommer 2012: 11).

²⁷ For the origins of *Improvisation Technologies* and its roots in the preceding, and first, digital dance school *Self Meant to Govern* (1995), see Ziegler (2017: 41-51).

²⁸ More recent editions of *Improvisation Technologies* are formatted as DVDs.

Steve Dixon (2007: 30), a researcher in media and computer technologies, states that the resource "is rightly considered the most aesthetically and pedagogically advanced example of the 'genre'". Nevertheless, he explains, "most of its acclaimed technical 'innovations' had in fact been developed and honed years earlier by lesser known artists and educationalists" (Dixon 2007: 30-31). As an example, Dixon cites research by the Bedford Interactive Institute conducted in the 1980s that superimposed "computer-graphical lines over video footage to trace and analyse arcs of movement" (2007: 30-31). The relative obscurity of Bedford's research, Dixon proposes, can be accounted for by developments in hardware systems and, notably, the shift from CD-ROMs to the internet. This, he suggests, has "rendered years of painstaking research and digital dance-analysis materials largely obsolete" (Dixon 2007: 30-31). Technical developments appear to have eclipsed the advancement of Bedford's research.²⁹ Another possible explanation is that the tools devised by the Bedford Interactive Institute were pedagogical tools aiming to support dance analysis and offer "generic tools to describe, analyse, interpret and evaluate dances—their own and those of others, in aesthetic and artistic terms" (Smith-Autard 2003: 163 [emphasis in original]). They did not have the backing of an internationally established choreographer. Nevertheless, what is interesting about this example is that it reveals a history of video annotation that pre-dates Improvisation Technologies, which is important in establishing a trajectory for video annotation as part of dance studies and analytic practices.

Material for the Spine

American choreographer and movement practitioner Steve Paxton (1939–) was a driving force behind the emergence of Contact Improvisation in New York in 1972 and was a founding member of the Judson Dance Theatre and the Grand Union, which were instrumental in the emergence of postmodern dance.³⁰ Paxton's focus on working with the immediacy of the senses and the body's response to gravity, along with the difficulty he experienced in "trying to describe the corporeal," shifted his early teaching focus towards developing interiorisation techniques as an approach to transmitting this tacit knowledge (Paxton 2003: 175-176, 182-183). Speaking about performance,

²⁹ Jenett explains that, generally speaking, each new stage and generation of media has become more unstable than the one before (Appendix B), and the Dance Heritage Coalition who explain that, "Degeneration of the image can become a problem for all [video] formats" (2011, p. 14). Zuniga Shaw also points to this problem in discussing the demise of Adobe Flash, which has implications for the longevity of *Synchronous Objects* (2017: 105).

³⁰ The Judson Dance Theatre was a collective of artists who performed at Judson Church between 1962–1964 and were instrumental in the development of postmodern dance. Grand Union was an improvisation collective that emerged from Yvonne Rainer's *Continuous Project—Altered Daily* (1969–1970). Described as "the wonderful collective, comedic, and anarchic group [...that] improvised all of their works" (Bither in Walker Arts Centre 2015), artists included, amongst others, Trisha Brown (1936–2017), David Gordon (1936–), and Douglas Dunn (1942–).

Paxton states, "I would bet that no dancer ever reviewed, however positively, has ever felt their dance captured in print" (1987: 16), a viewpoint that might extend also to the documentation of movement practice. He writes, "Language is not only prominent, but it can be coercive. We may opt to disregard experiences which don't work in language" (Paxton 1987: 17). Given the earlier discussion about mnemotechnics, the understanding of writing as a pharmakon—both a poison and a cure—Paxton's account implies that writing has more negative consequences for some kinds of knowledge than others. Approaches are needed to access and articulate the implicit knowledge of the body that cannot be sufficiently communicated through words, to create models for the mind that can tune attention towards the sensorial experience of being in the world. Subsequently, Paxton devised "a working model of the body [...] for teaching aspects of experience" (Paxton 2003: 178) which included ideokinetic imagery (visual and tactile imagery) to influence the sensorial experience of movement in a way that is not possible through language.

Material for the Spine (2008) is the result of a collaboration between Paxton and two researchers from Contredanse, Florence Corin and Baptiste Andrien.³¹ Corin and Andrien were committed to, and immersed in, the daily practice of Paxton's *Material for the Spine* syllabus, providing them with access to their lived experience that, in turn, informed the documentation process. For Paxton, developing movement co-ordination and maintaining and improving shape are fundamental goals for the mover in achieving efficiency of the body in motion, yet the student must begin with a sensorial focus (2008). The sensorial component of movement experience brings about an awareness of bodily organisation and of the effects of gravity and the weight of the body. This dual focus provides the structure for *Material for the Spine*, which is divided into chapters that focus on technical execution and bodily coordination alongside those that support the development of a heightened sensorial awareness of the effect of gravity on the body. Nevertheless, as Paxton explains, these foci are essentially interrelated:

Material for the Spine aims to provide a kinetic identity that the student is unlikely to have encountered before. A spine, head, and pelvis centred experience, which is explicit in design, but asks the practitioner to design the necessary sensations of movement for its manifestation. (Paxton and Contredanse 2008)

Synchronous Objects for One Flat Thing, reproduced

Synchronous Objects is a website publication that presents the findings of a comprehensive close reading of the organisational systems for *One Flat Thing, reproduced* (Forsythe 2000), a complex and fast-paced choreographic work that places great demands on even Forsythe's most veteran viewers.

³¹ Contredanse aspires "to provide tools and resources for choreographers and dancers in order to enable them link their studio work to an analysis of the philosophy of movement, body, composition, and history of their discipline" (Contredanse n.d.).

Dance researcher and creative director of *Synchronous Objects* Norah Zuniga Shaw (2017: 99) describes *One Flat Thing, reproduced* as a "contrapuntal ensemble piece exhibiting an exquisite cacophony of thematic material that is tightly structured by its three interlocking systems of organization." These are: Themes (movement material), Cueing, and Alignments (moments of synchronicity between dancers) (Zuniga Shaw 2017: 101). *Synchronous Objects* emerged as a result of a large interdisciplinary project directed by Forsythe, Zuniga Shaw, and animator Maria Palazzi³² and involved a team of interdisciplinary researchers including architects, statisticians, cognitive psychologists, philosophers, visual artists, geographers, and computer scientists (Zuniga Shaw 2017: 99). It is comprised of twenty different translations of *One Flat Thing, reproduced* which range from the analysis and representation of the work's elaborate cueing system to artistic readings of the work (Figure 4).



Figure 4: Screenshot of the Synchronous Objects homepage.

The tag line for *Synchronous Objects* is, 'What else might physical thinking look like?', a concept identified in Forsythe's 2008 essay *Choreographic Objects*. Forsythe (2008) suggests that

³² Palazzi is an animator and Director of the Advanced Computing Center for the Arts and Design at the Ohio State University.

Historically choreography has been indivisible from the human body in action. The choreographic idea traditionally materializes in a chain of bodily action with the moments of its performance being the first, last and only instances of a particular interpretation. The idea's enactment is not sustained and cannot be repeated in the totality of its dimensions by any other means. As poignant as the ephemerality of the act might be, its transient nature does not allow for sustained examination or even the possibility of objective, distinct readings from the position that language offers the sciences and other branches of arts that leave up synchronic artifacts for detailed inspection.

Forsythe's understanding that choreographic ideas might exist outside of body in the form of an object that may enable the prolonged study of dance motivates his artistic research. The suggestion that dance and movement knowledge could reside in a site other than the body (Forsythe 2008) is an intriguing provocation and sets the tone for *Synchronous Objects* and also for my descriptive and comparative analysis of the annotations it features.

Video Annotation in Multi-Media Publications

In the aforementioned publications, video annotation is a weakly associated practice. By this, I mean that it is just one of many methods used to articulate the thinking space of the choreographer or dancer. In *Material for the Spine*, for example, graphical forms of annotation appear in just seven of the thirty-eight exercises, which is unsurprising given the range of elucidation techniques that are used in the resource. In each publication, video is the primary method of documentation while additional layers of information are employed to transmit different kinds of knowledge. For example, video provides a visual record of movement exercises or the choreographic work: Motion Capture (in *Material for the Spine*) is used to create animations, verbal and gestural explanation (in *Improvisation Technologies* and *Material of the Spine*) integrates a layer of descriptive analysis with the physical delivery of ideas, audio commentary provides an account independent of what is in the video (in *Material for the Spine* and *Synchronous Objects*), and indexical forms such as contents pages or a glossary of terms support navigation in each of the publications.

The formation of a critical discourse about what annotation offers the analysis of dance, how it operates, and the impact it has on the viewers of video materials has been lacking. While there have been studies of these multi-media publications (Haffner 2013; Blades 2015a; Blades 2015b; Karreman 2017), there have been no comparative studies that examine the way annotation is used and its impact on dance scholarship in terms of how dance is seen, analysed, interpreted, and understood. Subsequently, it is unclear to what extent video annotation assists heterogeneous audiences in viewing dance.

Interdisciplinary practice appears to be a common trait for all of multi-media publications introduced in this chapter. According to Andrien, in the early stages of *Material for the Spine*, Paxton proposed drawing on glass as a method to identify the spatial components of movement important to his work. Paxton's proposal was later realised through computational means arising from Andrien's and Corin's experience and knowledge of graphic work (Andrien 2015). Paxton overcame an initial resistance to documenting his practice and felt that the combination of video and the geometry of the computer graphics was successful (Corin 2017: 39), suggesting that the layering of video could be more advantageous than a complete translation. What was important here was Andrien's and Corin's commitment to the daily practice of Paxton's movement, so they were afforded an experience that would contribute to their understanding of how to mediate its movement knowledge. Prior experience, through the aggregation of primary retentions of their phenomenological experience and the memories that accumulate through continued practice, are likely to have conditioned to what Andrien and Corin were able to attend in the documentary process. Thus Andrien and Corin would be more likely to understand what approach to documentation would best articulate Paxton's practice.

The ambition of *Synchronous Objects* was to, "harness [... a] quality of critical reflection by bringing a far wider range of perspectives and interrelations to bear on choreographic practice than has been done previously" (Groves, Zuniga Shaw, and deLahunta 2007: 94). This appears crucial to Forsythe's exploration of choreographic ideas existing independently of the body, as it seems likely that the combination of different knowledge-bases and prior analytic experience could aggregate to find an approach that may not otherwise have been conceivable by a dance-only team.

Improvisation Technologies, Material for the Spine, and *Synchronous Objects* are the result of an iterative and recursive process, an approach that deLahunta describes as engaging in, "research on the research itself" and according to "an intrinsic discourse coming from dance practice" (2014: 3; 2013: 19). In other words, the documentary and analytic processes are an extension of the research undertaken in the dance studio. If this is indeed the case, then it seems that annotation has the potential to extend or advance dance studies and could perhaps be thought of as an expansion of choreology, a field that originated in the theoretical search for knowledge arising from dance and that "aims to promote and enable practical research by articulating and debating what is peculiar to dance" (Preston-Dunlop and Sanchez-Colberg 2010: 3).

Annotation as an Editorial Practice

I noted earlier that annotation is annotation of something. It is a mark-up technique comprised of different methods that makes selections of, and adds content to, a source according to the interests and intention of the annotator. This means that adjustments can be made to the source in a way that makes it more valuable to the annotator, but also that alters the way the source is engaged with in the future, for annotator and reader alike. Subsequently, annotation can be positioned as an editorial practice.

Theatre historian Lindsay Goss draws attention to the ethical implications of annotation as an editorial practice when she contemplates the responsibility of working with other people's annotations, which implies that a discourse on ethics is possible. Goss (2015) uses the example of a revised edition of Russian Revolutionary Alexandra Kollantai's (1872–1952) autobiography published posthumously.³³ According to Goss, Kollantai had originally "misjudged the extent to which she might safely air her disagreements with Party Policy and ideology" and was obliged to create an autobiographical account more in keeping with, and representative of, her official position in the Soviet State (2015: 3). I noted earlier (p. 46 above) that Jackson proposes such annotations to be of little interest; however, in this example, Kollontai's marginalia become a dimension of writing in its own right, as proposed by Marshall (see p.45). These annotations are appropriated by editor Iring Fetscher in a re-authored version of the autobiography in 2015, 63 years after Kollontai died. It discloses the amendments that Kollontai made to her original autobiography, taking her previously private annotations and reintroducing them into public discourse through their publication. The edited autobiography is a reauthoring of an already re-authored source, returning content to the text that was intentionally discarded. On one hand, it could be argued that this does justice to Kollontai's original autobiographical intentions and the truth of her experience, however, without her editorial overview, it cannot be fully known to what extent the revised publication is representative of her wishes. Such annotations arguably claim authority as they return to the text the views that Kollontai sought to supress in the original. The editorial practice of annotation, Goss asserts, "can be insidiously presumptuous, if indiscriminately applied insofar as it establishes itself as more authoritative in its decision-making than the original authorial-editorial activity" (2015: 4). In other words, editorial choices in working with the materials of others ought to be carefully considered, because the author is unable to defend or authorise them.

³³ Kollontai "was a Russian Communist revolutionary, first as a member of the Mensheviks, then from 1914 on as a Bolshevik. In 1919 she became the first female government minister in Europe. In 1923, she was appointed Soviet Ambassador to Norway, becoming the world' first female ambassador." (Kollontai 2011)

Goss posits annotation as "an attempt to fix or stabilize the meaning of an object by adding a point of clarification or suggesting an enquiry that narrows the field of possible interpretation" (2015: 4). In other words, annotation adds information to a source to clarify its contents and helps to create meaning. Yet, by doing so, annotation creates an edited version that limits and constrains interpretation for future encounters. This means that annotation is at once an augmenting and restrictive practice. It seems that annotation might be as much about omission as it is about foregrounding, whether conscious or otherwise. If annotation is characterised by its capacity to fix and stabilise meaning, as Goss suggests, it also encounters a loss.

In the context of this study, the material condition of dance is essentially characterised by loss, and for centuries documentary traditions have sought to stabilise and concretise dance in the form of tangible objects. Nevertheless, these grammatisation efforts result in partial and incomplete records of dance, stabilising certain aspects and excluding others. This means that an incomplete translation of the original dance, which is effectively a re-authored version, is circulated to a community of users. The notion of adding, or returning, something to a source that could not be captured through the original documentary technique (i.e. video) through annotation is, therefore, of particular interest to this thesis. As a form of grammatisation, annotation is also a partial record but it becomes possible to consider how documentary forms might be augmented through annotational practices and which aspects of dance and movement knowledge can be represented in this way.

How annotation is used as an editorial practice is determined by intention. Goss's account relates to Kollantai's marginalia which are informal private corrective annotations that arise from a different intentional process to the articulation of artistic knowledge seen in *Improvisation Technologies, Material for the Spine,* and *Synchronous Objects.* Kollantai's annotations appear to be much more about a methodical 'corrective' re-working of a source, while Fetscher re-composes the autobiography for publication. But the annotations that feature in the multi-media dance publications introduced in this chapter are artist-led or were developed in close collaboration with the choreographer and/or dancer and intend to foreground thinking or movement intention. Nevertheless, annotation fixes and stabilises an interpretation of the work and thus what kinds of knowledge contribute to the collective knowledge of dance. While authoritative readings of dance have existed since the first use of dance and movement notation scores, there is room to contemplate the impact of annotation on how dance is seen, analysed, interpreted, and understood, and to what extent the pharmacological³⁴ properties lean more towards the positive or negative. In other words, are annotations beneficial in helping the

³⁴ As relating to the pharmakon—a poison or a cure (see p. 35).

dance viewer to see something important but less visible in the video record, or do they limit interpretation to only what the annotator intended?

Annotation Tools

Over the past few decades, technological advancements, such as ubiquitous computing and the advent of the World Wide Web, have resulted in unprecedented changes in how information is stored, accessed, and retrieved. Responding to the ubiquity of digitised documents and online document sharing, researchers in the late 1990s and early 2000s investigated human-computer interaction to understand how to support readers' physical habits in digital environments. Recognising annotation to be a highly-developed activity integral to active reading, research was conducted into how digitised documents could be annotated (see Marshall 1997; Marshall 1998; O'Hara and Sellen 1997; Ovsiannikov, Arbib, and McNeill 1999). More recently, the Hypothesis project, for example, has developed a tool that creates an annotation overlay for the World Wide Web which the team characterises as enabling a "conversation layer over the entire web that works everywhere, without needing implementation by any underlying site" (Hypothesis n.d.). In other words, when using the Hypothesis tool there is no change to the original structure or content of web sources, but an additional layer is created that enables annotations to be created, shared, and discussed. Such projects suggest that a provision for mark-up methods that originate in analogue practices continues to be important.

As this thesis examines video annotation for dance, I now turn my attention to annotation tools. Tools for the annotation of general video content have existed since the late 1980s and include EVA, MRAS,

AntV, Ambulant Player, and WaC (Cabral et al. 2012: 573).³⁵ Scholars in the fields of cognitive science (such as David Kirsch [2011]) and cognitive linguistics (such as Carla Fernandes and her team [Fernandes and Jürgens 2009: 4-5; Fernandes and Jürgens 2013]), have been using tools such as ELAN³⁶ (Figure 5) and Anvil (see Anvil n.d.) for video annotation. These have been used for the scientific study of dance,

Some materials have been removed from this thesis due to Third Party Copyright and confidentiality considerations. 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.

Figure 5: Screenshot of ELAN.

³⁵ EVA was one of the first systems to support video annotations that could be transcribed to text; MRAS allowed collaborative annotation; AntV and Ambulant Player supported multimedia annotations; and WaC enabled ink, text, and audio on top of single pre-recorded frames (Cabral et al. 2012: 573).

³⁶ See Max Planck Institute for Psycholinguists (n.d.).

and, according to researcher and inventor of the digital annotation tool Rekall Clarisse Bardiot, these are

seldom used to annotate recordings of performing arts. The possible reasons for this include the text-centrism of the software in question, the difficulty of linking to other documents, and the complexity of using the software during rehearsals. (2015: 82)

In other words, they are not best-suited to the demands of analysing studio-based dance practices for artists themselves.

Driven by the need for working with video materials of dance in a new way, researchers developed dance-specific annotation tools that started to emerge at the start of the twenty-first century. My research has uncovered that these tools can be divided into three general categories. The first category allows the user to directly annotate the video stream and includes tools such as DancePro, Rotosketch, and Video Traces,³⁷ often using multimedia annotations (and drawing in particular). The second category of tools enable textual annotations such as PM2³⁸ and the Choreographers Notebook.³⁹ The final category permit corpus annotation such as Rekall and DanVideo.⁴⁰ Corpus annotation enables the categorisation and annotation of multiple files in a single space, making it possible to manage large quantities of material. Despite so much common ground between these tools, the categories are useful because they identify different ways of engaging with video that results in a particular kind of annotation. Nevertheless, the use of these tools is context-dependent, driven by the interests and motivations of their user(s), and they may not be employed as intended.

Many of these tools have been tested on singular projects and have not been widely tested, which means they have not been reflected upon as critically as they might have been in terms of their usefulness or potentiality. Furthermore, the published literature is limited to introductions to the tools (Cherry, Fournier, and Stevens 2003; Kannan, Andres, and Guetl 2009; Singh et al. 2011; Bardiot 2015), research and development (Cabral et al. 2012 and Cabral 2014), and details of user-testing (deLahunta and Lieberman 2007; Cabral et al. 2011; Fernandes and Jürgens 2013; and Rekall 2018). While their

³⁷ Video Traces allows the user to annotate video through talking and gesture (Cherry, Fournier, and Stevens 2003).

³⁸ PM2 is a development of Piecemaker which was invented by dancer David Kern for the Forsythe Company. Developed by Motion Bank, PM2 enables the asynchronous annotation of video using through text in a way that operates as linked data.

³⁹ The Choreographer's Notebook is a web-based application designed to enable artists to provide and respond to feedback using annotations. The annotations are described as "metadata associated to video content," which are "anchored to a point in the timeline of a video but are stored externally" (Singh et al. 2011: 197, 200).

⁴⁰ DanVideo is described as "provid[ing] an easy metadata authoring environment via a graphical interface" that incorporates "a search engine that takes users' queries and retrieves dance semantics from metadata" (Kannan, Andres, and Guetl 2009: 550, 545).

creators emphasise their value, it is not yet known how valuable annotation tools will be and to what extent they will be embraced by those who analyse dance or the dance community more generally. Will they easily integrate into artistic practices, or will digital annotation tools suffer a similar fate to movement notation systems, which have been adopted by the few and not the many? While the use of dance and movement notation requires specialist expertise, making them appear less accessible, video annotation tools only require their users to know how to set them up in order to use them potentially making them more attractive tools for analysis. Nevertheless, it is highly likely that the barriers between digital tools and the dance community need to be more clearly articulated, examined, and addressed before annotation tools are taken up.

Collectivising Knowledge

The focus of the literature review now shifts to how annotation can be used to structure and organise frameworks of knowledge, which helps to unpack how ideas about dance and movement are categorised. How dance and movement knowledge is organised raises some interesting questions about the processes through which it is classified using names and labels and, therefore, what kinds of knowledge are searchable and retrievable in archives, libraries, on digital platforms, and so forth. The searchability and retrievability of ideas about dance has an impact on what is circulated to, and accessed by, a community of users. The discussion of categorisation and organisation leads me to contemplate how knowledge other than formal vocabularies of dance techniques and bibliographic metadata, such as tacit embedded knowledge, might be utilised and, subsequently, circulate more successfully in the digital milieu.

To begin, I look to the activity of collating and organising knowledge in the field of Information Science amidst the "information overload" of the late nineteenth and early twentieth century. I then contemplate how the activity of naming and labelling objects in our surroundings constructs a framework that shapes the way we see the world. This is followed by the discussion of how dance vocabularies can create standards that enable the articulation and transmission of knowledge. Specific examples from dance are then explored, including Co-Director of Motion Bank Florian Jenett's video annotation of *Using the Sky*, the *Transmedia Knowledge Base* (TKB) project directed by Cognitive Linguist Carla Fernandes, and the *Capturing Intention* research project led by dancer Bertha Bermúdez Pascual.

The social, economic, and cultural changes brought about by the Industrial Revolution (c. 1760–c. 1840) led to a widespread concern for universality, standardisation, and communication in the late

nineteenth and early twentieth century Western world (Day 2006: vi). European Documentation Science, which emerged in the first half of the twentieth century and later became Information Science, responded to these concerns along with "documentary overload, coordinating and encouraging scholarly communication, and not least of all world peace [...] and international development" (Day 2006: v-vi). Documentalist⁴¹ Suzanne Briet (known for the revolutionary book in library studies, *Qu'est-ce que la documentation?* first published in 1951), identified that with modernity came a growth in networks of knowledge (Day 2006: 56). Ronald Day, an expert on the culture and history of information, documentation, knowledge and communication of the 20th and 21st centuries, claims that modernity was the era of the academic specialist and "a *new cultural technique*" was required in information science to manage the evolution and wealth of human knowledge (Day 2006: 56).

Innovators in Documentation Science set about devising techniques for the organisation and retrieval of scholarly materials and devised library classification systems which are still in use today. Notably, this included the Universal Decimal Classification System devised by the "father" of information science, Paul Otlet, at the end of the nineteenth century (1868–1944)⁴² and the Dewey Decimal System devised by librarian and educator Melvil Dewey (1851–1931) and first published in 1876. These were revolutionary systems that, for the first time, allowed scholars to methodically search for resources, which were now listed according to subject area.

Comparisons have been made between Otlet's vision and the techniques used to manage the information overload of the digital milieu. Charles van den Heuvel, an academic of the History of Science, hypothesises that Otlet's vision "to enhance collaborative knowledge production" though a worldwide network (van den Heuvel 2009) was an "analog World Wide Web" (2009 in Wright 2014: 8). Ambitiously, Otlet envisaged that:

Everything in the universe, and everything of man, would be registered at a distance as it was produced. In this way a moving image of the world will be established, a true mirror of his memory. From a distance, everyone will be able to read text, enlarged and limited to the desired subject, projected onto an individual screen. In this way, everyone from his armchair will be able to contemplate creation, in whole or in certain parts. (cited in Wright 2014: 8)

⁴¹ The title *Documentalist* is said to have originated in 1932 to refer to specialists in documentation. It was reportedly rejected in 1956 "as a barbarous neologism" and naturalised only by a limited circle of scholars who founded the British Society for International Bibliography in 1927 (Woledge 1983).

⁴² A document is traditionally perceived as a text-based or text-like document, but Otlet observed that not all documentary phenomena are text-based or text-like and could be three-dimensional including museum objects (Buckland 1997: 805). Otlet argued that "the *objects themselves* can be regarded as "documents" if you are informed by the observation of them (in Buckland 1997: 805).

Otlet drafted plans for "a system of networked computers—'electric telescopes' [...] that would allow people to search through millions of interlinked documents, images, and audio and video files" (Heuvel 2009 cited in Wright 2014: 8). He foresaw the system as,

desktop workstations—each equipped with a viewing screen and multiple removable surfaces—connected to a central repository that would provide access to a wide range of resources or whatever topics might interest them [...] The system would also feature so-called selection machines capable of pinpointing a particular passage or individual fact in a document stored on microfilm, retrieved via a mechanical indexing and retrieval tool. (Wright 2014: 8)

This vision is not unlike how we search for information on the World Wide Web today and requires a concept for organising, structuring, and linking documents through indexes, which are comprised of words as headings and indications of where the information is located.⁴³

On a primary level, we index the world around us on a daily basis. Alexei Dingli, a researcher in communication technology and author of *Knowledge Annotation*, proposes that from a young age we learn to label objects in our surroundings, leading us to create "a hierarchy of labels which describes the world" (2011: 4). Developing a classification system of sorts indicates that individuals are active in constructing the lens through which they see, organise, and navigate being in the world. This organisational system, in which labels are interwoven to create a complex semantic network, is employed "to organise and process thoughts to convey a message" and becomes "more discrete and automatic" as we age (Dingli 2011: 4). Interestingly, Dingli proposes that, "this process resurfaces and becomes annotation when we handle print media" and feel the need to scribble in the margins of a text (2011: 4). Here, it seems that Dingli characterises annotation as an everyday activity, and that there is a similarity between the thinking that takes place in the transductive dialogue between an individual and artefacts and the processes of naming, labelling, and organising. If this is the case, it seems that these are different yet interconnected activities that sit at different ends of the annotation spectrum. At one end of the spectrum is a concern for standards and conventions for organising knowledge, as can be seen in the annotation work of the World Wide Web Consortium (WC3) (WC3 2017), and marginalia is at the other.

⁴³ An analogue method of organising knowledge that envisaged the computational structures we know today can also be seen in Theodor Holm (Ted) Nelson's vision for hypertext systems. Nelson (1937–), a philosopher and pioneer of information technology, coined the terms *hypertext* and *hypermedia* in 1963. "Nelson's idea of hypertext was to realize nonsequential writing through which the interconnectivity of literature can be unfolded in different temporalities. Every hypertext would imply a jump from one spatiotemporal setting to another" (Hui 2016: 51). Tim Berners-Lee, the inventor of the World Wide Web, was influenced by this vision.

Dance has a long tradition of movement vocabularies formed of terms and phrases that create a language-like structure that develops over time. The foundation of the classical ballet vocabulary, for example, is attributed to ballet masters Pierre Beauchamp (1689–1761) and Raoul Auger Feuillet (c. 1653–1709), who are credited with its codification and standardisation to arrive at a "universal language" of dance with limited deviations from certain standards (De Moroda 1967: 452; Laurenti 1994: 87; Foster 2011: 25). A framework was established through which different components of dance could be articulated, and the widespread adoption of the Beauchamp-Feuillet notation meant that the vocabulary became part of what was (and is) collectively known about dance. The process through which this occurs is helpfully summarised by Noa Eskhol (1924–2007) and Abraham Wachmann (1931–2010), the inventors of Eshkol-Wachmann Movement Notation (EWMN). They explain that,

special groups of terms do not remain within their own bounds, each in the particular style wherein and for which it was created, but are raised through years of persistent usage to the levels of basic laws which propose to explain and define the world of movement in general. (Eshkol and Wachmann 1958: vii)

In other words, the standardisation that arises through the classification of steps facilitates the exchange, transmission, and retrieval of knowledge. Classical ballet vocabulary is a good example of this, as it is utilised worldwide, permeating language barriers and traversing different genres of dance. The terminology comprises technical and ideological concepts that are employed with only minor variations, illustrating that it is possible to achieve a certain quality or standard of dance provided that one does the training.

Dance knowledge is passed from generation to generation, from person to person, through the oralvisual tradition of body-to-body transmission, as well as mnemotechnics. The grammatisation of this knowledge through the written word and notation creates a fixed and stable account that can be circulated easily and widely amongst a community of users. It becomes interesting to contemplate, therefore, the differentiation between the knowledge gained through the experiential training of the body and that which is gained through scholarly study. By that I mean, what can be captured on the page, in the video record, and how does this facilitate individuation and collective individuation? Nevertheless, it seems that this is not such a polarised spectrum, as the dancer's training is typically influenced by a canonical evolution of the collective knowledge of dance and movement.

The examination of annotation as an organisational system feels more concrete when looking to the field of corpus linguistics where annotation is an essential method for the analysis, interpretation, and augmentation of a source (McEnery and Wilson 1996: 24; Leech 1997: 5). Corpus linguist Geoffrey

Leech explains that, "Corpora are useful only if we can extract knowledge or information from them" (1997: 2, 4): this is about working systematically with a large number of structured texts to find rules that govern them. For example, corpora are repurposed and manipulated to serve a particular function, for example, creating "better dictionaries or grammars of the language from 'real language data'" (Garside, Leech, and McEnery 1997: viii). Corpus linguistics uses annotation to apply labels to the texts to provide "information about the language of the text," a process that is described as *metalinguistic* (Leech 1997: 2-3). Here, annotation increases the text's utility and value. Leech identifies that there "is no purely objective, mechanistic way" of doing this (1997: 2), and thus the researcher's subjectivity is inherent in the process.

Corpus annotation was traditionally a manual process that involved looking at historical manuscripts of cultural significance, but computation has allowed much larger corpora to be studied and patterns to emerge that would not otherwise be possible.⁴⁴ Looking for large-scale patterns in computer code, finding similarities, extracting meta-data, etc. is all part of the normal operations made possible by computer storage and networks and, as the power and capacity of machines has increased, so has the size of the annotated corpora (Leech 1997: 1). Characterising annotation as a subjective process presents an interesting departure point for talking about dance vocabularies, how computer annotations can be used to increase the value and utility of dance materials, and to what extent large patterns in dance and movement knowledge can be found.

Using the Sky

I turn my focus now to *Using the Sky*, one of three online digital scores to emerge from Motion Bank, "a four-year project of *The Forsythe Company* providing a broad context for research into choreographic practice" (Motion Bank 2013 [emphasis in original]). This is the last of the four multimedia publications introduced in this chapter that are returned to in Chapter Six.

Using the Sky presents an analysis of choreographer Deborah Hay's (1941–) solo choreography *No Time to Fly*⁴⁵ and seeks to make her unique approach to dance making "accessible in new ways through the digital medium" (Motion Bank 2013).⁴⁶ Motion Bank was interested in Hay's

⁴⁴ Computer corpus linguistics emerged in the 1960s through the Brown Corpus with findings published in *Computational Analysis of Present-Day American English* (Kučera 1967).

⁴⁵ The premiere was at St. Mark's Church in-the-Bowery, New York, 25–27 March 2010 (Hay and Motion Bank 2013).

⁴⁶ The other online digital scores focus on the practices of Jonathan Burrows and Matteo Fargion, and Bebe Miller and Thomas Hauert (see Motion Bank 2013).

conceptualisation of the body and her practice, which focuses on raising "the threshold of attention and energy" of the "multi-cellular body" in the moment of dancing (Hay and Motion Bank 2013). For *No Time to Fly*, Hay

wanted to *choreograph a spoken language* that would inspire a shift in dance away from the illustrative body, despite its intense appeal to dancers and audiences alike, to a non-representational body. (2016: 1 [emphasis in original])

In other words, the body does not have to represent an idea nor tell a story; instead, one's awareness of the body can be the focus of dance. This necessitates consideration of what kinds of documentary approaches are best suited to this movement ideology, as traditional codified forms of dance and movement notation, for example, are insufficient. Hay writes:

How one perceives one's cellular body is a rational, logistical, and analytic conundrum for anyone other than the individual willing to personally experiment with such a body. Creating language that can potentially stimulate sensually meaningful responses from this cellular entity has been the nature of my work for forty-five years. The translation of this feedback has been the core of my teaching, my personal practice, and my experience of performance. (2016: 3)

The notion of an "analytic conundrum" here is particularly insightful, and Hay describes how the articulation and transmission of the experiences of moving has occupied her dance career. The language to do so is not pre-existing but must be developed through an artist-led enquiry that accommodates a particular vision and choreography that also accounts for inherent subjectivities in experience.

Using the Sky focuses on three solo adaptations developed by dancers Jeanine Durning, Juliette Mapp, and Ros Warby, who were invited to work with the choreographic score of *No Time to Fly*. The score (Hay 2016) provides the structure for the dance but does not prescribe what movements are to be performed, making it unlike traditional understandings of a score. Instead, the score offers questions and tools as a starting point for honing an awareness of, and attention to, the dancing body. In other words, it is an invitation to "open up the realm of possibility" (Hay and Motion Bank 2013). Although the three dancers had previous experience of working with Hay, their adaptions vary because they interpret the score differently. Moreover, the task is to respond to the score instructions that create a framework for interpretation that is not fixed in meaning and response. This means that each performance a dancer gives is different in movement to previous and subsequent performances, and because of this, each adaptation was recorded seven times—resulting in twenty-one versions of the dance to provide the content for *Using the Sky*.

The twenty-one recordings were analysed and annotated by Jenett using Piecemaker2 (PM2) "to look

for structures consistent with the multiplicity of possible expressions of the same dance" (Motion Bank 2013), a process that took approximately one year. In *Using the Sky*, annotation is used to tie video or text materials together with an analytic interpretation of the dance and movement knowledge central to Hay and the dancers' practices. That this process took a year is unsurprising. Looking for consistent structures in twenty-one interpretations of a choreographic score, that are not geared towards the "what" but the "how" of performance, requires in-depth study. Jenett took the score as the starting point for analysis, as this was the thing that was consistent with all twenty-one versions.

Jenett is one of the few researchers to have published reflections about video annotation as a method of analysis for dance (see Jenett 2015). Based on his extensive annotation of Hay's *Using the Sky* in the development of *No Time to Fly*, Jenett (2015: 25) stresses that it is important to find "the appropriate labels or names for each annotation" which emerge from "An inside out' process where the material teaches the names and 'outside in' when one arrives with a set of names." Both approaches, he asserts, "have their own strengths" (Jenett 2015: 25). Dance annotation relies on a repeated and in-depth analysis to achieve greater familiarity and a "perception [that] will 'tune in' over time," in order to understand the uniqueness of a particular creative and artistic process (Jenett 2015: 25). This makes it necessary to "revisit early annotations after spending some time with the material" (Jenett 2015: 25), because what is seen changes with time.

Jenett is an outside eye: he is neither the choreographer nor the performer for the work he is analysing. It might be said, therefore, that he adopts a similar perspective of a dance notator in some respects. Differently, however, Jenett corroborates his annotations in interviews with the dancers (Jenett 2015: 25), which implies a collaborative endeavour in creating what might be referred to as "authoritative" annotations. Jenett's experience indicates a particular kind of engagement with the material and curiosity that is intentional and different to the naming and labelling of everyday objects that Dingli describes.

The process of video annotation for dance that Jenett reflects on also appears to be different to social media annotations. Twitter users, for example, freely categorise their social media contributions using hashtags (a metadata tag) which make it possible for other users to retrieve content by searching for specific things. The annotations attached to posts are instantaneous, almost automated, and do not usually require users to study the content they contribute to the social web as a precursor to tagging.

Jenett's experience also appears to differ from annotation processes involved in mechanical turks,⁴⁷ an internet marketplace where Human Intelligence Tasks (HITs), which are annotation tasks that computers are currently unable to do, are outsourced to humans to complete for typically low rates of remuneration. Amazon Turk (see Amazon 2005–2017) is one such example and lists HITs such as transcribing shopping lists, mimicking facial expressions, checking transcripts for accuracy, or identifying lampposts in photographs. The HITs are methodological and tedious and can only be completed by human beings (normally without prior training), yet are considered necessary for the development of the web. In contrast, the manual annotations featured in *Using the Sky* involves the deep study and analysis of materials by experts on dance, or by those working in close collaboration with those experts, as Jenett does.

Text-based manual annotation can create **folksonomies**, which are bottom-up user-driven labels or tags, or top-down **taxonomies** or ontologies,⁴⁸ which are used to add structure and meaning to digital content that can be understood by computer agents (Dingli 2011: 21).⁴⁹ Dingli proposes that the lack of standardisation in folksonomies can result in "issues such as homonymy and synonymy" (2011: 32, 13). In other words, the same annotation is used to classify two different objects, or two different annotations are ascribed to the same object. In terms of social media, it seems that any fears about the lack of standardisation can be quashed, because a "consensus around shared vocabularies does emerge even when there is no central controlled vocabulary" (Dingli 2011: 13). There is a reciprocity in the Twitter community, for example, whereby user-generated content is organised according to particular hashtags, and a consensus emerges around the shared vocabularies used. A collective organisational structure emerges through a desire to be able to easily share and retrieve social and cultural content with other users. Nevertheless, in the digital milieu, the inconsistent use of names and labels poses challenges for *interoperability*, which refers to the ability for both computer software or systems and humans to exchange and make use of the same information. However, standardisation appears to be a challenge for both automated and manual annotation, and there appears to be no

⁴⁷ The term *mechanical turk* derives from an eighteenth-century chess-playing automaton invented by a Hungarian nobleman, Wolfgang von Kempelen (1734–1804). Thought to be an intelligent machine capable of beating the most expert chess players, it was toured around Europe to great acclaim. The turk was later revealed to be a hoax that featured a person hidden inside the machine controlling the movements of a humanoid dummy (Standage 2002). Today, Mechanical Turk web services allow humans to help machines perform tasks for which they are not suited.

⁴⁸ For computational processes, *ontology* refers to standardisation and formalisation, as opposed to the philosophical understanding of the term as relating to the nature of being and existence (Hui 2016: 2-3). Hui suggests that the two are related, that they both refer to the categorisation of concepts and how they are grouped, hierarchically or otherwise (2016: 2-3, 75-58).

⁴⁹ The new annotation standards of the WC3 (see WC3 2017) results in a fundamental change on the networked computing landscape; however, this is outside the scope of this thesis. I point to these here simply to acknowledge endeavours for standardisation.

perfect solution. The discussion about how knowledge is organised makes it possible to contemplate what processes might be applied to organising knowledge about contemporary movement practices on digital platforms.

Transmedia Knowledge Base (TKB)

The TKB project was an interdisciplinary research project directed by Fernandes that took place between 2009–2010 and 2012–2013; it offers an alternative to conventional approaches to dance documentation that tend to foreground the analysis of the body as a mechanical object. It employed a consistent scientific rigour involving large teams of researchers that combined perspectives from cognitive linguistics, dance research, and new media to look closely at choreographic cognition. The project sought to expand the scope of documentation by foregrounding the "interconnections of choreographic thought and human motion" (Fernandes and Jürgens 2009: 5). It was driven by the following research questions:

How is a choreographer's imagetic not just verbal thought translated into an embodied-type of thought in motion via the dancers? Can choreography be interpreted as thoughts in motion? What is the impact of verbal language on the dancer's movement? When does the dancing body demand words and vice versa? (Fernandes and Jürgens 2009: 4)

The TKB project researched the unique and specific terminology used by Portuguese choreographer Rui Horta in his creative practice to develop a glossary of terms, and close attention was paid to the inextricably linked and co-occurring gestures and body movements (Fernandes and Jürgens 2009: 4-5; Fernandes and Jürgens 2013: 119). To collect materials for analysis, the researchers filmed Horta's creative process leading up to the premiere of three different choreographic works between 2006 and 2011 and drew upon "all kinds of prior knowledge that would not be available to the general public (e.g. his private portfolios describing the piece, his own text, notes of script-boards)" (Fernandes and Jürgens 2013: 118). In addition to these multi-modal materials, a frame-by-frame analysis and manual annotation of 80 hours of video footage was undertaken using ELAN, a software programme normally used for conversational analysis which was adapted to analyse full-body performance and to synchronise videos with the annotation (Fernandes and Jürgens 2009: 4-5 and Fernandes and Jürgens 2013: 116-119). The findings of this analysis can be found in the TKB online archive (Figure 6, p. 68) where definitions, descriptions, and notations are available to viewers through video, sound, and icons (Fernandes and Jürgens 2009: 6).



Figure 6: Screenshot of the TKB digital archive.

The online interactive knowledge-base, or archive, was developed "to dynamically document, structure, annotate and browse a range of recently created dance pieces" (Fernandes and Jürgens 2009: 3). It aims to fill the gap created by the absence of a "digital archive that could both map and work as a hub or anchoring tool to document the extremely rich variety of choreographic styles and lexicons" (Fernandes and Jürgens 2013: 117). Dance artists upload their material to the knowledge-base and tag their materials with the concepts and ideas with which they work, which makes them searchable within the archive. Over time, the materials become organised to form a semantic network of ideas that accords with a consensus about how dance and movement knowledge is categorised. This can be seen in Figure 6, which highlights some of the connections made between the practices. It appears that organising content in this way is a positive step for representing dance and movement knowledge whereby ideas, in addition to bibliographic metadata, are used. Importantly, this means that web users do not need to know what they are searching for before they start, encouraging intrigue and imagination in the search for dance materials.

Capturing Intention

Bertha Bermúdez Pascual is another researcher exploring the "implicit knowledge embedded in choreographic processes" (Fernandes and Bermúdez 2010: 20). Bermúdez Pascual, who is a former dancer with the Emio Greco and Pieter C. Scholten (EG|PC) company, led the *Capturing Intention*

project (2004–2008), which aimed "to develop new forms of documenting, notating, and transmitting dance" (Bermúdez Pascual 2013 and deLahunta 2007). The project was driven by the question, "What notation system can capture inner intention as well as the outer shape of gestures and phrases?" (deLahunta 2007: 5).⁵⁰ EG|PC see intentionality as constitutive of their movement language, which Bleeker explains, "does not refer to some kind of idea pre-existing the execution of the movement but rather describes directionality and the distribution of intensity embodied within movement and crucial to the quality of the movement's execution" (2010: 3). Despite the comprehensibility of some notation systems, they do not easily capture movement intention if not visible in the body. Bermúdez Pascual studied Labanotation and Benesh Movement Notation to investigate how they operate and their suitability for articulating the work of EG|PC and, subsequently, sought to find an alternative approach.

Bermúdez Pascual led the development of a glossary of terms and sought a better organisation of verbal language to capture concepts that might arise initially from the experience of moving (deLahunta and Bermúdez 2013: 54). EG | PC acknowledge that language and vocabulary have different connotations for different people, depending on experience, their field of work, and how they see the world. The lens constructed by an individual arises from their experiences and the methodologies, artefacts, and technologies with which they engage on a regular basis. It can be understood, therefore, how creating a language-based method of documentation is a challenge for articulating an array of experiences but also for transmitting work to a wider community, whether that is the dance community beyond the EG|PC dance company or the general public. The Capturing Intention documentary (deLahunta 2007) shows some resistance from Greco in selecting words to represent particular movements in recognition that they risk fixing an idea that is not tangible. The vocabulary that does arise (Bermúdez Pascual 2013) is important research that directly addresses the friction between language and movement, what kind of knowledge is available in dance records, and the difference between the observational and participatory perspectives, or explicit and implicit knowledge. It seems important, therefore, that the methods selected for the transmission of intentionality do not fix and limit its possibility but instead encourage metastability as well as different ways of knowing and learning. This might be said to have been realised, to some extent, in the Double *Skin/Double Mind* installation (*DS/DM*) (Emio Greco | PC 2004).

⁵⁰ Other interesting projects include the *Inside Movement Knowledge* project, a reflection on artistic praxis that considers linguistic-related concerns (Fernandes and Jürgens 2009: 9-10) and *Pre-Choreographic Elements*, which examined the "pre-phrase of choreography" (deLahunta and Bermúdez 2013: 54).

DS/DM is an outcome of the *Capturing Intention* project. It is an installation based on an EG|PC company workshop taught since 1996 which was developed to prepare the participants' minds and bodies in a similar way to that of the EG|PC dancers (deLahunta 2007). *DS/DM* comprises a three-dimensional frame with a screen on one side featuring a life-size image of Greco moving while explaining his actions. Speakers hanging from the corners of the frame provide real-time audio feedback to the user based on their performance measured by the real-time data from the participant's movement picked up by a pre-programmed gesture follower. The installation, which could be viewed as a form of embodied documentation, does not position movement concepts as fixed but as ideas for investigation. It repositions the viewer as a participant responsible for both receiving information from, and sending information back to, the installation (Ziegler and deLahunta 2010: 6). This presents a unique method of transmitting the thinking that characterises EG|PC's practice.

The focus on terminology and language in the research of Jenett, Fernandes, and Bermúdez Pascual is interesting, because it necessitates a discussion, and sometimes a negotiation, between researchers, artistic motivations, and dance and movement knowledge. They draw upon a valuable untapped range of sources (artists' reflections, awareness, and use of terminology), which are not usually captured or communicated beyond those intimately involved in the process, and find ways of articulating and transmitting these through multimedia publications (*Using the Sky*), digital archives or knowledge-bases (TKB project), and interactive documentation. The three research projects discussed in this section use methods of annotation in a way that is different from *Improvisation Technologies, Material for the Spine*, and *Synchronous Objects* and employ methods of study and analysis to find patterns in the language and terminology used in dance where ideas are given names, labels, and descriptions. Furthermore, pathways are constructed through annotation techniques that help to locate and link materials relating to a single work (*Using the Sky*), multiple artistic practices (TKB Project), or to facilitate human computer interaction.

Conclusion

This chapter has reviewed literature from different fields to provide a point of departure for exploring video annotation in dance. The philosophy of technology offers an understanding of how knowledge is grammatised through mnemotechnics to become collectivised. Studies of marginalia have helped to establish the association between annotation and physical media, such as books. This research has much to gain from these studies in characterising annotation as an editorial practice involving different people with different interests and motivations. The recognition that annotation also

supports the organisation and navigation of materials offers useful insight into how dance and movement knowledge is classified, what kinds of knowledge can be categorised, and the tensions that arise between vocabularies that can fix ideas about dance. It seems that the rupture between the physical media of the book, digital computational storage, and networked media potentially resists making a connection between the different kinds of annotation discussed in this chapter. Nevertheless, there is common ground in the search for suitable methods to articulate and transmit knowledge, whether that is through techniques of augmentation or classification.

This chapter has shown that while there are discussions about the different practices of annotation in terms of physical print sources, the analogue, and digital organisation of knowledge, there is little theoretical material specific to video annotation in dance. There are, however, research projects that are exploring the potential of video annotation, as has been seen in this chapter. This suggests that a whole new conceptual lens is needed through which to study and understand what annotation in dance is, which is what my research intends to offer. Nonetheless, the discussion in this chapter provides a useful starting point for contemplating what annotation is, how it operates, and the kinds of properties that might be attractive to practitioners and researchers working in dance. The next chapter discusses the methods that build upon this review of the literature and form the methodological framework to interrogate what video annotation in dance offers the dance field.
CHAPTER THREE: RESEARCH DESIGN

This is the first study in the dance studies field to interrogate the contributions of video annotation to dance scholarship. To build theory about the characteristic properties of video annotation and the experience of engaging with it, I involve myself directly with the practice and look closely at my experience of it. My background and skills as a dancer and Labanotator contribute to a meaningful examination of video annotation and play a crucial role in the analysis and discussion of research findings.

My vocational dance training was at the Laban Centre⁵¹ where Labanotation was, at the time, a mandatory module for all first-year undergraduates. I had prior experience of Labanotation from GCSE and A-Level Dance. My interest in notation and my aptitude for the practice fuelled each other, and in my first year I was notating my choreographic work. I elected for additional Labanotation studies in the second year of my dance training, and it was the central topic in my undergraduate and master's dissertations.

Three research projects in particular (Stancliffe 2008; 2010a; 2010b) ignited an interest in exploring the capacity of Labanotation as a stand-alone method of documentation and the integration of supplementary analytic techniques to suit my needs as a notation practitioner. This research constituted an iterative process of familiarisation with the dance as it is documented through notation, as well as a gradual recognition of the capacity, possibility and limitations of notation practice. Concurrently, I reflected on and evaluated my experience of the notational processes and subsequent developments in my understanding. These were cyclical processes, part of an extended period of study. This first-person engagement provided the foundation for research findings. The techniques of documentation, content analysis, reflective writing, and interpretation provide a valuable foundation for this study of video annotation.

Emergent Design

Sharlene Nagy Hesse-Biber and Patricia Leavy (2008 cited in Patton 2015: 51) suggest that an emergent design is "particularly useful for discovering knowledge that lies hidden, that is, difficult to tap into because it has not been part of the dominant culture or discourse." According to Patton, it requires a flexible and open approach that is not pre-determined but evolves as data is collected because of how new opportunities and interests emerge as the research is conducted. This requires

⁵¹ Now Trinity Laban Conservatoire of Music and Dance.

openness and pragmatism "as well as trust in the ultimate value of what inductive analysis will yield" (Patton 2015: 50). This trust "allows meaningful dimensions to emerge from the patterns found [...] without presupposing in advance what those important dimensions will be" (Patton 2015: 64).

An emergent research design was important, because my research spans a period of time where much of the work going on in video annotation is in development: researchers are still building, developing, and refining the tools that are used for video annotation, for example. This means that I am researching through the emergence of video annotation projects themselves. Furthermore, video annotation is not (yet) a common practice in the dance community and is employed by only a handful of researchers. Although annotation has started to gain currency as a digital method of analysis, its value is often assumed or implied. Without existing literature that outlines what video annotation offers dance scholarship, the emergent design meant that it was possible to adapt to new ideas, concepts, and findings as the research progressed, whilst the possibilities and limitations of the research were revealed as new materials, ideas, and patterns were encountered.

The qualitative and emergent design of this study gave rise to my data collection methods, which included literature reviews, archival research, interviews, and active research. Denscombe (2014: 146) summarises the motivation for a mixed methods approach:

Rather than rely on findings from a single method or a single approach, the mixed methods approach regards the use of multiple sources as beneficial in terms of the quality and fullness of data it produces.

The approach is further characterised by selecting methods according to "how useful they are in terms of the specific issue that is being investigated" (Denscombe 2014: 146). The mixed-methods design enabled me to look at the phenomenon of video annotation from different perspectives, investigating the practice itself, and how it relates to notational practices.

Reading and Analysing Video Annotation

In the beginning stages of this research, I contemplated the differences between notation and annotation in contemporary movement practices. Without literature already available in the field of dance studies, my research led me to the field of literary studies and the examination of marginalia in particular. This research was introduced in Chapter Two and provided a useful theoretical grounding for contemplating the general properties of annotation. To understand annotation in more detail and with greater specificity in relation to dance, I undertook extended periods of study where I engaged with different annotations that feature in the four multi-media publications introduced in Chapter

Two. The descriptive and comparative analysis of these annotations allows me to examine how they condition how dance is seen, interpreted, and understood. These publications are the DVD-ROM resources *Improvisation Technologies* (Forsythe et al. 2012) and *Material for the Spine* (Paxton and Contredanse 2008), and the website publications *Synchronous Objects* (Forsythe and OSU 2009) and *Using the Sky* (Hay and Motion Bank 2013). The content analysis of the four selected multi-media publications focused specifically on the graphical annotations (in *Improvisation Technologies, Material for the Spine,* and *Synchronous Objects*) and text-based annotations (in *Using the Sky*). Through descriptive and comparative analysis of selected chapters from these publications, I explore how annotation is used to articulate and transmit principles of artistic practice.

According to Denscombe (2014: 284), content analysis reveals what is relevant and prioritised in the source, how values are conveyed, and how ideas are related. As the multi-media publications seek to transcend the traditional readership of dance, it was important to examine the points that Denscombe identifies to come to some conclusions about how video annotation transmits certain values and ideas about dance. I wanted to discover, independently of what the publications claim to do, what understandings arise from annotated video sources. Following my analysis, I then questioned how annotation supports or hinders what is known, and what can be known, about dance.

I developed worksheets for the descriptive and comparative analysis of annotations, which I refer to as "Coding Sheets."⁵² This supported the documentation and organisation of the results of my analysis in a structured and schematised way. The Coding Sheets (see Table 1, pp. 83-85) are comprised of three sections. The Information Sheet in Part One provides a space to document observations that do not pertain specifically to the annotation, including the motivation for the development of the multi-media publication and details about how materials are presented, filmed, or staged. This helps to create a contextual and logistical lens through which to examine the publication whilst ensuring that these details do not interfere with the content analysis itself. Part Two provides a space to note the background details of the annotator and/or the viewer, including the motivation and rationale for analysis. This offers insight into the discipline or knowledge-base(s) that might inform analysis and, therefore, support interpretation. Part Three of the Coding Sheets is a workspace for describing and analysing annotations that sought to determine how people annotate. The paper proposed that, "Generally speaking, any annotation can be described in terms of its content, form and functionality" (Ovsiannikov, Arbib, and McNeill 1999: 338), and this is used to support a multi-faceted and systematic

⁵² This term is used by movement analysts Carol-Lynne Moore and Kaoru Yamamoto (1998: 220).

approach in analysis. The Coding Sheets were crucial in providing a framework for focusing my attention towards annotation, helping to filter out general observations and superfluous details irrelevant to the study. Focused attention was important because the four multi-media publications are comprised of a number of interesting facets that are worthy of discussion, many of which are not forms of, or approaches to, annotation. Furthermore, the Coding Sheets evidence the accumulative nature of the analysis, development in comprehension, and the labour the analysis involved. This work is distributed across many iterations and serve as data for comparative analyses.

To begin, I identified all instances of graphical and text-based annotations that were likely to interpret the reading of the video sources in the four multi-media publications and then conducted a systematic analysis of these. Once similarities started to emerge amongst particular kinds of annotation (for graphical annotations and for text-based annotations), I selected a sample for in-depth descriptive analysis. I divided the task into units of analysis, looking separately at the form, function, and content of the annotations to understand the mechanics of each. Through this, different sub-categories of annotation emerged (i.e. graphical object annotations, graphical sequential annotations, digital marginalia, and linked annotations) that allowed me to organise the analysis more efficiently by examining differences between annotations that belonged to a single category. During this process, my attention shifted from the annotation mark as an isolated unit of analysis towards the recognition that the meaning and value of annotation could only be understood in relation to the video content to which they are attached. Over the time, the dialogical properties of annotation were revealed.

Creating Video Annotation

I felt that it was important to formulate a holistic account of how annotation functions differently for its reader(s) and creator(s): I examined what it means to create annotations in addition to understanding annotation as it already exists in multi-media publications. This primary research involved an extended period of video annotation to learn more about how it works as a method of dance analysis, a core approach in this study. Two annotation tools were selected: Dance Pro, which was developed as part of Europeana Space⁵³ and allows for the multi-modal annotation of video, and PM2, which is currently used by Motion Bank and enables text-based annotations.⁵⁴ As they each offer something different, my intention was not to present a comparative analysis of what these tools *do*

⁵³ Europeana Space was a project led by the Centre for Dance Research (C-DaRE) at Coventry University that facilitated access to stages of user-testing, and to the creator and coder of DancePro.

⁵⁴ Motion Bank is co-directed by deLahunta and Jenett. deLahunta is one of my thesis supervisors, and this enabled access to unpublished documents and up-to-date versions of PM2.

but rather a descriptive and comparative analysis of the annotation that they *enable*. In essence, I looked at the experience of drawing on top of video footage in DancePro and of creating digital marginalia and linked annotations in PM2. Once it was clear how these annotation techniques helped to draw out particular understandings of the video content, I was then able to compare their positive and negative attributes. The experience enabled me to arrive at some conclusions about how video annotation influences the way dance is seen, analysed, interpreted, and understood.

To minimise any bias that might arise in viewing (and that might impact the experience of creating annotations), two videos of unfamiliar choreographic works were selected, one for each tool. Ohad Naharin's *Deca Dance*, first performed by Batsheva Dance Company in 2000,⁵⁵ was annotated using DancePro, and Sasha Waltz's *The Rite of Spring*, which premiered in 2013,⁵⁶ was annotated using PM2. These works were selected also because they were recordings of full-length performances, which I considered to be preferable to short excerpts to allow for the possibility of ongoing and extensive analysis. Selecting only full-length performances limited what videos were available for selection, as *YouTube* tends to favour trailers and choreographic extracts. As the focus was on the annotation experience, I was not concerned that the works were of performances my analysis was restricted to what was contained in the video content and there was no additional commentary nor insight to the creative or rehearsal processes. I brought my experience as a dancer and movement analyst, but I did not seek additional materials that would support content analysis and interpretation. Instead, my analysis focuses on what I could understand from the videos arising from my annotation experience.

In this method, I adopt a particular relationship to the tools—that of the researcher. I engage in ongoing reflection about the nature of my video annotation experience. The analysis and interpretation of the resulting data facilitated insight into how video annotation works as an analytic method. This reflective process is not commonly built into the process of annotation, and I acknowledge that this presents a different approach to how such tools are usually used. This is a form of heuristic enquiry that enabled me to hypothesise the value of video annotation for dance studies more broadly.

⁵⁵ *Deca Dance* was uploaded by *YouTube* user Mopryhob (2013).

⁵⁶ *The Rite of Spring* was uploaded by *YouTube* user Gedik (2016).

Patton describes heuristics as, "a form of phenomenological inquiry that brings to the fore the personal experience and insights of the researcher" but does not emphasise "definitive descriptions of the structures of experience" in the way a pure phenomenological approach might. Heuristics synthesises the intuition and tacit understanding of the researcher in making sense of the phenomena at the heart of the research enquiry (Patton 2015: 118-119). Heuristics is a "process of internal search through which one discovers the nature and meaning of experience and develops methods and procedures for further investigation and analysis" (Moustakas 1990 cited in Patton 2015: 119). "It is the combination of personal experience and intensity that yields and understanding of the essence of the phenomenon" (Patton 2015: 119). With regards to my study, such an approach supports a deep and repeat examination of video annotation and how the experience contributes to understanding.

The annotation process was conducted in several stages over the course of a year. As there is only a handful of researchers working with dance video annotation, and not much in terms of an established practice on which to model my study, the extended timeframe was crucial to allow my experience and reflections to guide and shape data collection and the analysis and interpretation of data. In the first phase of annotation using each tool, a framework for analysis was developed that was comprised of eight stages:

- 1. **Pre-annotation:** Tool set-up and familiarisation, reading any instruction manuals and related materials.
- 2. **Pre-annotation:** Watch the video (excerpt) in full for familiarisation and record initial observations on paper, which form the basis of an accumulative working document. Repeat this stage until ready to move onto video annotation.
- 3. Video annotation: Identify a task to guide the annotation based on the video content and/or observations from Stage Two.
- 4. Following each annotation session, write a reflection based on the experience of annotation and of using the tool.
- 5. Following each annotation session, write a descriptive analysis of the choreographic excerpt based on what details can be recollected.
- 6. Repeat stages 3–5 until the annotation activity is complete.
- 7. Post-annotation: Analyse the first-person account and identify key observations.
- 8. **Post-annotation:** Analyse the descriptive analysis to identify differences between details that have been documented and what can be understood from the video that has not been externalised.

This framework enabled me to conduct the analysis in a systematic and repeatable way and then helped me to formulate some conclusions about the possibilities and limitations for articulating dance and movement knowledge through annotation. This method offered a way of testing prior assumptions of what annotation is and, importantly, helped me to recognise the labour involved in annotation. The written reflection in Stage Four proved to be a crucial method for charting my experience. It allowed me to record and analyse issues in the challenges I encountered and helped me to reflect on the motivation for, and intention of, using video annotation. Given my first-person perspective, this written reflection was important because it would be difficult to later return to specific details relating to the experience. In my reflections, I recognised that the intention to annotate the video of a full-length choreographic work was overly ambitious and selected five-minute excerpts of the video to annotate instead.⁵⁷

This first phase of annotation became a preparatory study, and the eight stages of the analytic framework I had established were refined as my annotation practice developed. The descriptive analysis in Stage Five was intended to identify any discrepancies between my understanding of the choreographic work and what I had annotated, but this was discarded after six annotation sessions. Subsequently, Stage Eight became obsolete. I found that developing a written account that could sufficiently represent the richness of what I understood about the choreographic work was unfeasible: it was too time-consuming for the results that transpired. Furthermore, in this early phase, my attention was drawn to what I could easily identify as a result of prior experience, and the annotations that I created were indicative of this. I recognised that a description and reflection on these annotations would provide a sufficient record of the experience.

Following a period of annotating pre-recorded footage, a second approach to video annotation was built into the research design. I had become curious to understand more about how having access to the information arising in and through the creation and rehearsal of a choreographic work would alter and inform the annotation process. To do this, I embarked on the real-time annotation of a choreographic work and selected choreographer Alison Curtis-Jones's live teaching and re-staging of *Drumstick* (2015).

Drumstick is a re-imagining of Laban's *Dancing Drumstick* (1913) performed by Summit Dance Theatre, which was re-staged on second-year undergraduate students at Trinity Laban Conservatoire of Music and Dance during a three-week intensive in May 2017. The re-staging, which drew upon Curtis-Jones's choreographic practice, the experience of her dance company members, and a video of the 2015 performance, was annotated using a version of PM2 that has been modified for real-time annotation. This modified version enables its users to create a linear account of observations, entering information in the annotation software in a similar fashion and with a similar immediacy to using a social media

⁵⁷ The complete recordings were annotated in the preparatory studies and five-minute excerpts for later stages: 54:30–59:30 minutes for *Deca Dance* and 11:53–16:53 minutes for *The Rite of Spring.*

chat window.⁵⁸ The real-time annotation experience was different to annotating pre-recorded footage because I had access to the creative and rehearsal process of the work under study which allowed access to how the work developed, the decisions made, and instructions and imagery crucial to Curtis-Jones's choreographic practice. The real-time live process meant that, unlike my annotation of *Deca Dance* and *The Rite of Spring*, I was not annotating a single video file but creating a video record for each studio session. Subsequently, my analysis was not stored in a single location but distributed across a number of files which invited me to contemplate my relationship to these annotations as tertiary retentions as the process evolved.

The annotation of pre-recorded video and the live choreographic work allowed me to be immersed in the experience of video annotation, taking two different perspectives on the same phenomenon. The formative and summative analysis of this experience enabled me to discover themes and patterns that I could utilise to build theory about what annotation is. In doing so, I was also able to cross reference my findings with the discourse on marginalia.

Interview

In November 2016, I travelled to Frankfurt, Germany, to interview Jenett, who was identified in Chapter Two as one of the few researchers to have published reflections on his work with annotation. *Notes on Annotation* (Jenett 2015) offers an account based on Jenett's extensive analysis of choreographer Deborah Hay's *No Time to Fly*, which forms the basis of the multi-media publication *Using the Sky* (Hay and Motion Bank 2013). The interview allowed me to gain deeper insight into Jenett's experience and understandings of what annotation offers as a method of analysis for dance. Furthermore, it gave me access to an account of how PM2 was developed in the context of artistic practice and in response to the analytic needs of the Motion Bank team. This provided privileged insight into the emergence of digital annotation tools for dance that fed into my investigation.

The interview was semi-structured: I had a series of open-end questions that provided the basic framework for conversation yet allowed for a balance between discussing Jenett's experiences as well as sharing my own insights into annotation. The interview was informal, adopting a conversational tone, and often deviated away from my questions as insights were shared and new pathways were followed as the discussion unfolded, but we always returned to the questions to address my research queries. Toward the end of the interview, Jenett and I started working with pen and paper in an effort

⁵⁸ Unfortunately, the technological limitations of DancePro in its current prototype format meant that it was impossible to use for live annotation. For an account of technological issues, see Appendix D.

to articulate our own understandings of how the process of annotation facilitates analytic insight and understanding. I audio recorded and transcribed the interview and the transcript, along with drawings that visualise the experience of annotation from both Jenett's and my perspectives, can be found in Appendix B.

The interview with Jenett was important for developing my understanding of video annotation because, while there is literature that focuses on other kinds of annotation practices (such as marginalia), accounts relating to experiences of the video annotation of dance are rare; Jenett himself identifies that the idea of time-based annotation had not occurred to him prior to his work with Motion Bank. The interview helps to address the gap in the literature evidence base. Engaging with the reflective insights of another annotator, alongside my own experience, helped me to understand how annotation can be used to generate meaning around certain practices of movement. Direct quotes pulled from the interview transcript are used to support my discussion of annotation in the later stages of this study.

Choreographic Notebooks: Archival Research

In addition to examining what video annotation is and how it functions through the analysis of existing annotations and by creating my own, this study seeks to contextualise the emergence of video annotation as part of a heritage of both documenting and analysing dance. This is particularly important given that much of the work going on in video annotation is in development and video annotation is not (yet) a common practice in the dance community. Prior to the discussion of video annotation, therefore, I look to notational practices in Chapter Four and the use of choreographic notebooks in Chapter Five. Both Chapters Four and Five draw attention to work of British movement pioneer Margaret Morris who invented a system of dance notation that rivalled Labanotation and BMN. To understand more about Morris's practice, I delved into the Morris archives at The Fergusson Gallery in Perth, Scotland (see pp. 89-90), where I came across a collection of fifty-two A5 *Morning Books* that span seventeen years of the choreographer's career. These notebooks contain details of Morris's personal life but are most valuable for this study because of how they were used to develop ideas relating to all areas of Morris's dance practice, her dance notation in particular.

The analysis and interpretation of Morris's *Morning Books* helped me to contemplate the cultural and social attitudes towards notation through the lens of her individual experience. It was crucial to recognise that the contents of these notebooks were personal musings, quite different from publications that formalise a particular position. The notebooks are contextualised documents that

serve a particular purpose and, therefore, ought to be treated accordingly. Importantly, the analysis and interpretation of these primary sources revealed new insights into practices of movement notation and activities of the dance community at a particular moment in time. Subsequently, the research contributes new knowledge to the literature that already exists by drawing attention to the little-known method of notation that Morris developed.

The intervals between visits to Morris's archive collection at the Fergusson Gallery became valuable for the analysis of the *Morning Books*. As the research evolved and I started to contemplate the relationship between thinking, understanding, and mnemotechnics, I started to recognise that these notebooks offered more than a site for spontaneously capturing ideas but appeared to be instrumental for Morris in processing and developing ideas through different techniques including writing, notation, and drawing. The flexibility of my research design meant that it was possible to shift my focus to include the examination of the *Morning Books* as an example of mnemotechnics. Consequently, this focus on choreographic notebooks became an important bridge in the thesis between the use of movement notation that prescribes rules and frameworks for their use and the seemingly less restrictive practice of video annotation.

Summary

The literature review in the previous chapter provided a philosophical and theoretical frame of reference for examining annotation as a form of mnemotechnics, an editorial practice, and a process for organising knowledge. However, the limited discourse relating to video annotation in dance necessitates primary research to explore how these frameworks characterise an understanding of what annotation is, how it operates, and how it impacts what is and what can be known about dance. Given that video annotation is a recent method of analysis in comparison to dance and movement notation, an emergent design is crucial as it enables methods and frameworks to develop as ideas emerge and the possibilities, limitations, and challenges of the research present themselves.

The structure of this thesis shifts from describing, analysing, and considering analogue methods of documenting, processing, and transmitting movement and choreographic ideas (in the form of dance and movement notation and choreographic notebooks) to digital methods of analysing and transmitting dance and movement notation (video annotation). This scope helps me to develop and apply a range of methods that help me to differentiate between notation and annotation. The methods used, and discussed in this chapter, ensure the validity of the research undertaken because I look at the phenomena of video annotation from different perspectives. My methods enable me to

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investigate annotation as both a process and product, creating a holistic examination of the impact of video annotation on dance scholarship. My first-person perspective and own direct engagement with a selected number of annotation tools and multi-media publication enables me to develop a unique insight into how annotation impacts the viewing and analysis of dance by the creator and reader of annotations alike.

The next chapter introduces looks to a heritage of dance and movement notation as mnemotechnics that articulate and transmit dance and movement knowledge through a process of grammatisation. Using selected dance and movement notation systems from the Renaissance and the twentieth century, I present a narrative about the invention, development, and appropriation of these systems according to the technological and social context particular to the time of their emergence. I contemplate how such systems facilitate individuation and collective individuation in a way that shapes what an individual knows and understands about dance and how a collective cultural memory emerges through notation practices. As well as enabling recordings of dance knowledge to persist through time, I highlight what is omitted from notational records and subsequently what kind of knowledge is omitted from the cultural dance memory. Importantly, the next chapter looks to notational practices to offer a context for positioning video annotation as part of the most recent stage of documentary traditions in dance.

Table 1: Coding Sheets

Source/Publication:			
Part One: Context Sheet			
	·		

	Part Two: The Annotator
Ro • • •	e and Status Who is the annotator? What is the level of their experience? (Amateur, expert, etc.) What is their relationship to the source? What is the nature of their experience in the field? Relationship to the source Interests Knowledge of the subject matter
• • •	Methodologies and methods notation Perspective Purpose Intention Attention
Ex;	perience In dance With the choreographic practice With the source With the tool

	Part Three: Annotation
For • • •	m: Lines (underlining, highlighting, arrows) Symbols (punctuation, notation, etc.) Shorthand (codified, conventional) Text (single words, phrases, marginalia) Non-textual (images, drawings, diagrams) Temporal forms (gesture, voice)
Cor •	ntent: Make Selections Add Content • Public or Private • Tactic or Explicit
Fun • •	i ction: Thinking Recalling Clarifying Sharing Organising

CHAPTER FOUR: NOTATION AS SOCIO-TECHNOLOGICAL SYSTEMS

This chapter looks at a selection of codified dance and movement notation systems invented between the fifteenth and twentieth century to show how ideas about dance documentation evolve. The technological and social context surrounding these notation systems illustrates how they weave a rich history that contributes to the collective knowledge of dance. This chapter lays the foundation to contemplate the context surrounding the emergence of video annotation and to what extent it might be considered as the most recent development in a trajectory of documentary practices for dance.

The chapter begins by identifying a need for dance and movement notation. Four systems are introduced: the Beauchamp-Feuillet system (first published in 1700), Labanotation/Kinetography Laban⁵⁹ (first published in 1928), Danscript (first published in 1928), and Benesh Movement Notation (BMN)⁶⁰ (first published in 1956). I transition from the Renaissance to the twentieth century primarily because of the ties between Beauchamp-Feuillet and Labanotation, but also because of the predominately oral-visual tradition of dance that followed the Beauchamp-Feuillet system until the end of the nineteenth century (Farnell 2005: 148). Each system is considered according to its intentional application, originator's vision, and how they serve the dance style it was created for. Recognising notation systems as belonging to a particular time and as context-specific avoids an approach where Beauchamp-Feuillet notation, which originated in the Renaissance era, is evaluated against more recent notations for its ability to document the dance of today. All but Danscript form part of the historical canon and highlights that the uptake of mnemotechnical systems is not only characterised by technological capacity but also social factors such as institutional support, the celebrity status of benefactors, and an active contribution to discourse and debate in the media. These social factors are less prevalent for Danscript than for the narratives built around Labanotation and BMN, which makes Danscript a useful contribution to this study.

⁵⁹ Labanotation is the preferred name in the USA and the UK while *Kinetography Laban* is preferred in Europe. But these names also point to differences in the way symbols are used. I was educated in Labanotation and, subsequently, will refer to Laban's method of notation by this name; I use *Kinetography Laban* only to highlight difference in origin.

⁶⁰ Rudolf and Joan Benesh preferred *Choreology* to *BMN* because they sought to arrive at "the meaning of purpose of movement notation in relation to dance," which they distinguish from notation, annotation, and note-taking (1977: 12). I use *BMN* to differentiate between this notation system and the choreological practices that are rooted in Laban's work.

For the general discussion of dance and movement notation, I draw primarily from the writings of Hutchinson Guest (1989 and 1984) who is one of the few people to have dedicated her life's work to researching notation systems. I draw upon the work of dance scholar Susan Leigh Foster (2011) and scholar of seventeenth and eighteenth century performing arts Jean-Noël Laurenti (1994) for the discussion of Beauchamp-Feuillet notation. To contextualise twentieth century notation systems, I refer to publications by their inventors (Benesh and Benesh 1956a; 1956b; 1956c; 1969; 1977, Daniels and Morris 1926, Laban 1975; 2011, and Morris 1928; 2003). The review of available literature forms a starting point for establishing a narrative of the invention and development of Western dance notation. In the absence of up-to-date publications on Danscript, primary sources provide invaluable insight into Danscript and its evolution in response to, and alongside, other twentieth century notation systems.

Since one of my key concerns in this thesis is how video annotation can advance what is known about dance and, by extension, how it contributes to collective knowledge, Stiegler's thesis of mnemotechnics which was introduced in Chapter Two comes into view here. It offers some useful terms and concepts for thinking about humankind's relationship to technologies, and how technologies (such as notation) support memory and communication and influence how dance is seen. As my thesis does not delve deeply into these philosophical arguments, I discuss them lightly in this chapter to emphasise certain trends that are characteristic of notation practices. I position notation as more than a utensil for documentation but as a process of grammatisation that characterises how movement is seen. This makes it possible to argue that knowledge about dance evolves according to the analytic systems used for its documentation and I contemplate how notation contributes to the collective knowledge of dance through the creation of tangible records. This deeper insight helps to establish a socio-technological context through which the relatively recent emergence of video annotation for dance can be contemplated.

Dance and Movement Notation—Archival Research

The descriptive and comparative analysis of reading and creating annotations, which is reported on later in the thesis (see Chapters Six and Seven), led to an understanding of what annotation is, bringing into focus how the practice was different from, but linked, to notation. I became curious to understand to what extent video annotation, as a relatively new practice in dance, could be positioned as part of an existing heritage of analytic and documentary practices and, because of my background in Labanotation, decided to focus on dance and movement notation. This focus on notation enabled me to focus on specific practices of grammatisation that would help to develop an understanding of how (an)notational practices contribute to individuation and collective individuation. In other words, how deconstructing dance into units of analysis to enable its description and formalisation in the format score is a process that transforms the thinking of the notator and creates an account of dance that can be circulated easily and widely amongst a community of users. To do this, it was first necessary to determine the extent to which it is possible to depict different (and sometimes competing) codified notation systems as part of a narrative concerning an ongoing search for suitable methods for dance documentation. This is important because it highlights that dissatisfaction with existing notational technologies is not unique to the present day but can be seen throughout the history of dance. Developing this narrative required an understanding of the historical, social, and technological context in which notation systems were invented, used, and disregarded.

My enquiry started with Labanotation, first developed by Rudolf Laban; choreographer Kurt Jooss (1901– 1979); dancer Dussia Bereska (c. 1900–);⁶¹ and notator Albrecht Knust (1896–1978) amongst others (and also developed by later generations of notators), and Benesh Movement Notation (BMN) developed by dancer Joan Benesh (1920–2014) and her husband, mathematician Rudolf Benesh (1916–1975). The decision to focus on these two systems, given that an estimated sixty systems were invented in the twentieth century (Hutchinson Guest 1989: 201-203), came from the recognition that they are the most celebrated movement notation systems to have originated in the twentieth century and because they are still in use today. Following a study of available literature, I pursued primary sources housed in the Rudolf Laban Collection at the National Resource Centre for Dance (NRCD) at Surrey University in seeking to understand more about the context surrounding the emergence and development of these systems.

At the NRCD, a catalogue search using the term *notation* led me to the Natural Movement Archive collection and the work of British Pioneer of Natural Movement⁶² Madge Atkinson (1885–1970). Working at the same time as Laban, Atkinson developed a technique of Natural Movement that was inspired by American dancer Isadora Duncan (1877–1927); Swiss composer, musician, and educator Émilie Jacques-Dalcroze (1865–1950); and also by nature. Little has been written about Atkinson's work in comparison to the early modern dance practices of Duncan and Laban, although her work on Natural Movement

⁶¹ Date of passing is unknown.

⁶² Natural Movement sought an alternative way of moving to ballet and vaudeville and embraced ideas of the natural (Fensham 2011: 1). Isadora Duncan (1877–1927) is usually understood to be the "prime mover" in this field (Fensham 2011: 1), and second-generation pioneers include Atkinson, Margaret Morris (1891–1980), and Ruby Ginner (1886–1978).

features in *The Dancing Times* (Atkinson 1926). What is particularly interesting about Atkinson for this research was her interest in historical dance, e.g. the study of existing methods of notation, including Beauchamp-Feuillet. Furthermore, Atkinson adopted a shorthand method of notation invented by Duncan's brother, Raymond Duncan (1874–1966), to record and standardise elements of her method of natural movement inspired by Greek dance. It was Atkinson's use of shorthand that drew my attention to artists utilising and re-inventing already existing systems and documentary approaches to suit the needs of their own practice.

A conversation with an NRCD archivist brought my attention to Margaret Morris and her efforts to develop an abstract symbol-based notation system for the documentation of all kinds of human movement. *The Notation of Human Movement* (Morris 1928) was, coincidentally, published in the same year as Laban's early notational system⁶³ yet, despite a lifelong commitment to its development, Morris's Danscript was never widely adopted. This appeared to offer an interesting line of enquiry: how and why did Laban's notation system, also utilising abstract symbols, achieve relatively widespread success and application in comparison to other notational methods developed for modern dance? What system-specific factors contributed to this, and what, in the context and community of notation users, can account for this? Despite my interest in Atkinson's use of shorthand, I decided to focus my enquiry on Morris to see what I could uncover about her movement notation system. Nevertheless, my research into Atkinson became particularly valuable in understanding Morris's own use of Duncan's shorthand in fulfilling her notational aspirations (see pp. 110-112).

My interest in Morris's work led me to the Margaret Morris archive in July 2015, which is housed at The Fergusson Gallery in Perth, Scotland. The archive collection was started by her mother,

who obviously thought her daughter was destined for future greatness. She kept everything from Margaret's earliest days as a child on to adulthood, programmes, correspondence, costumes, press cuttings, etc. (Hastie n.d. 1)

Jim Hastie (1936–2010), the former President and Artistic Director of the *International Association of Margaret Morris Movement* (MMM), describes the turbulent history of the archive. What remains today survived the London bombings in World War II, multiple office relocations, a burglary-turned-arson attempt on the association's offices, and an office fire. In each of these events, items were lost and

⁶³ This was first published in German in *Methodik, Orthographie, Erläuterungen* (1928) and the English translation was published in 1930.

damaged (Hastie n.d.). Following the death of her husband, painter John Duncan Fergusson (1874–1961), Morris closed her dance school and, shortly after, Hastie was alerted by telephone that there were three skips outside the school filled with archive material. Hastie travelled from London to Glasgow by bus and retrieved as much as possible before the refuse collectors arrived (Hastie n.d.). Hastie donated the rescued collection to The Fergusson Gallery in 2010 and has since transformed from an uncatalogued collection located in the administrator's office, to a semi-organised collection that occupies pride of place alongside Fergusson's archive in the gallery's research room.

Given the uncatalogued status of the Morris archive, I did not know what the collection contained prior to arrival. Nevertheless, I hoped to uncover primary sources that would account for the absence of Danscript from dance discourse relative to the presence of Labanotation and BMN, and which might help to contextualise the development of twentieth century notation practices more generally. I began by systematically examining the archival materials in the order they were stored, first encountering personal correspondence and MMM newsletters. On day three, I discovered a collection of personal notebooks, which Morris referred to as *Morning Books*, which became important documents in gaining insight into the development of Danscript. As their title suggests, Morris wrote in these notebooks almost daily and they contain her innermost thoughts, sources of inspiration, ideas, and observations relating to her personal life and professional practice. The notebooks contain details of MMM, her dance therapy practice, and Danscript. Following this discovery, I made three further trips to the archive in May 2016, April 2017, and January 2018, each trip lasting five days. During these visits, I noted all reference to Danscript, including developments in choice of notation symbology and movement conceptualisation, notes from meetings with Ann Hutchinson (now Hutchinson Guest), and Morris's ideas for marketing her notation. These findings contribute to narrative about dance and movement notation that follows.

The Need for Notation

Western stage dance has a rich heritage of dance and movement notation, and the earliest known records have been traced back to the fifteenth century (Hutchinson Guest 1984 and Hutchinson Guest 1989). A number of systems have since been invented which suggests an increasing, and perhaps never-ending, motivation to search for suitable modes of documenting dance and movement knowledge (see Table 2, p. 91). Hutchinson proposes that notation is driven by the need to preserve "ballets for prosperity," to train the analytic eye, and to make "the knowledge of great teachers [...] available to people in all countries and in all periods" (1968a: 308). As well as recording dance and enabling its circulation, notation systems

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exemplify the movement ideologies through which they were developed. The pool of knowledge contained in collections of notation scores written using different approaches contributes to the collective knowledge of dance.



Table 2 (above): The number of known Western notation systems to have emerged since the late fifteenth century. **Table 3 (below):** The number of known Western notation systems that have emerged in different decades of the twentieth century. The data for these tables is taken from Hutchinson Guest's *Choreo-graphics* (1989: 183-184).



New notation systems arise from the tension between what kinds of information about dance can be captured through the analytic and conceptual frameworks that characterise existing systems and the highly specific, irreducible, and particular approaches to artistic practice. Hutchinson Guest reports that since 1928 (the year that Labanotation and Danscript were published), "on average, a new system [of notation] has appeared every four years" (1984: 78). Yet the development of new systems appears to have reached a peak in the 1950s, with a notable decline thereafter (see Table 3, p. 91). As video recording technology did not reach the consumer market until the early 1970s, there does not appear to be an immediate correlation between the loss of appetite for inventing new notation systems and the appearance of moving image technologies, though this could be hypothesised for later decades when the potential of computation was explored for recording and generating dance.⁶⁴ The complexity of human movement and the artistic nature of dance, along with the lack of funding and difficulties in the humancomputer interface, meant that developments in computation for dance were slow (Politis 1990). Another explanation is the emergence of new areas of scholarly study where systems for categorising and measuring human movement were being developed—such as in dance medicine and science (which grew out of sports medicine), the foci of which includes physiology, anatomy, kinesiology, and biomechanics. Furthermore, the somatic practices originating in the post-Victorian era that focused on experiential learning and somatic research offered alternative approaches for the analysis and conceptualisation of movement (Eddy 2009: 6).

Renaissance Notation Systems

The first known records of Western dance notation are identified as *L'art et instruction de bien dancer* (c. late fifteenth century),⁶⁵ described as the "first printed book extant devoted to the art of dancing," and *The Dance Book of Margaret of Austria* (c. 1450), a magnificent book written in gold and silver (Hutchinson Guest 1984: 44). These publications used letter coding systems where the first letter of a step's name is used to document dance sequences.⁶⁶ A letter coding system also features in the Catalonian manuscripts (c. late fifteenth century), which are stored in the Cervera archives in Spain (see SCA Renaissance Dance n.d). The manuscripts are considered to be the most remarkable examples of early notation practice,

⁶⁴ For example, Michael Noll, a researcher for Bell Telephone Laboratories in Murray Hill, New Jersey, explored computer generated two-dimensional and three-dimensional films (see Noll 1966) and created the animated *Computer-Generated Ballet* in 1965 (see Noll 1994).

⁶⁵ Following the conventions of the French language, I have not capitalised the titles for French publications.

⁶⁶ Hutchinson Guest (1989) identifies five types of notation: words and word abbreviations, track drawings, stick figure systems, music note systems, and abstract symbol systems.

because the letters used have been transformed into signs to create a pictorial, yet abstract quality suggestive of the movement they represent (Hutchinson Guest 1989: 3).

Letter coding systems were common in the Renaissance, because the performance style of steps was widely known, meaning that notation was written for a reading public—in other words, the social elite. Dance notation scores in this period do not include stylistic properties, only the steps to be performed. This indicates that prior knowledge of dance was required and assumed to exist in the reader. The failure to document knowledge other than the sequence of dance steps means that such details become lost when the fashion of dance changes. In this instance, the collective knowledge of dance combines the information recorded in notation scores and in other mnemotechnical forms and knowledge of performance style that is stored in biological or internal memory and transmitted through the oral-visual tradition of dance. The grammatised knowledge of dance persists throughout history, archival practices permitting, while the tacit understanding of performance style is lost as ideas about dance change.

The absence of performance style in Renaissance dance notation makes Thoinot Arbeau's (1519–1595)⁶⁷ *Orchésographie* (1925) first published in 1588⁶⁸ a valuable resource for contemporary scholarship. *Orchésographie* does not offer a new system of notation, but "is a detailed treatise on the society dances in vogue throughout the sixteenth century" (Beaumont 1925: vii). Dances were written by rotating the musical stave ninety degrees to allow for the steps to be written alongside their corresponding music note (Figure 7, p. 94). According to Hutchinson Guest, this was the first time a concession was made to make room for details of dance on a musical score (1984: 46). *Orchésographie* provides specifics of how dances were performed, detailed descriptions of steps and timing, and the social etiquette for male and female dancing partners, including the protocols of touch (Foster 2011: 21-23, Hutchinson Guest 1984: 45-47, and Hutchinson Guest 1989: 4). This thick description was accompanied by drawings (Figure 8, p.94). Arbeau also included "a narrative of the experience of performing each particular dance" (Foster 2011: 21-23).

⁶⁷ Arbeau was a pseudonym. The author's true name was Jehan Tabourot.

⁶⁸ de Moroda (1967: 45) and Hutchinson Guest (1984: 46) cite the year of publication as 1588, whereas elsewhere (Hutchinson Guest 1989: 4) the date is cited as 1589.





Fig. 187 — The Dance called "La Gaillarde."—Fac-simile of Wood Engravings from the "Orchésographie" of Thoinot Arbeau (Jehan Tabourot): 4to (Langres, 1588).

Figure 7 (left): Arbeau wrote dances by rotating the notation stave and writing the names of steps alongside their corresponding musical note (Image: Wikimedia n.d.). **Figure 8 (above):** An example of a drawing that accompanies Arbeau's *Orchésographie* (Image from Lacroix c. 16th century).

Orchésographie reads as a dialogue between Arbeau and his pupil Capriol and identifies the importance of being skilled in the social art of dancing, particularly if wanting to win the affection of young ladies (Arbeau 1925: 18). Capriol (in Arbeau 1925: 17) was worried that he:

neglected to learn the art of good manners which so many scholars acquire at the same time as their serious studies ; because, on my return [from Paris and Orléans], I found myself in a society in which I was forced to remain dumb, unable to speak or move, and regarded as little more than a block of wood [...] I should have liked to acquire the art of dancing in the leisure hours between my studies ; it is an accomplishment that would have made my company agreeable to everyone.⁶⁹

Here, Capriol identifies that his delinquency in learning to dance meant that he could not fully participate in society, because he did not have the necessary skills. Arbeau advises that Capriol ought not to be concerned with dances of the past as they are no longer in fashion, out of reach and lost because of the "passing of time or the idleness of man, or the difficulty of describing them" (1925: 21). Arbeau cites which dances should be known, to which Capriol responds:

I perceive then that those who come after us will be ignorant of all these new dances you have just named, for the same reason that we have no knowledge of those of former times [...] It is surely in your power, M. Arbeau, to repair this ? Set down in writing how I can achieve this polite art. (in Arbeau 1925: 21-22)

⁶⁹ In excerpts from *Orchésographie*, I maintain the spacing of semi-colons and question marks from the original.

Both Arbeau and Capriol appear to correlate the challenge of documenting dances with an inability to recall dances of the past. The dialogue in *Orchésographie* acknowledges the need for describing dances to enable their preservation. However, as Foster explains:

They saw no opposition between the written and the live, nor did they lament the potential loss of some movement that might not be documentable. (The sentimental notion of documentation emerges more in the nineteenth and twentieth centuries). Instead, the first choreographers presumed that their contributions to documenting dance would better preserve it for subsequent generations and, in addition, improve the status of dance. (2011: 17-18)

Dance scholar Cecil Sharp (1859–1924), who revived English country dance, states, "it would be difficult to exaggerate the historical importance of [Arbeau's] treatise, for it contains all the exact knowledge that we have of the fifteenth and sixteenth century" (in Arbeau 1925: vii). This suggests that Arbeau's treatise can be employed for the interpretation of dances in the aforementioned *L'art et instruction de bien dancer* and *The Dance Book of Margaret of Austria*, showing that different kinds of artefacts contribute to dance and movement knowledge. According to Hutchinson Guest, *Orchésographie* was the most widely translated, reprinted, and circulated dance book of the Renaissance prior to the publication of the Beauchamp-Feuillet system (1984: 45-46 and 1989: 4). Combined with dances notated in the Beauchamp-Feuillet system, Arbeau's *Orchésographie* makes it possible to study and reconstruct some Renaissance dance today.

The Beauchamp-Feuillet notation, published in *Chorégraphie ou l'art de décrire la danse, par caractères, figures et signes démonstratifs* (1700) and written by Raoul Auger Feuillet,⁷⁰ was the first widespread system of Western dance notation. Louis XIV of France (1638–1715) founded the *Académie Royale de la Danse* (Royal Academy of Dance) in 1661. Laurenti (1994: 82) asserts that the intention was to replace "the privileges of the guilds—in this case those of the dancing masters and violin players—with a unifying organization" and to assert "French influence, cultural and otherwise, on foreign nations." This was "important as the many principalities vied with each other for supremacy in the noble arts" (Hutchinson Guest 1984: 42-43). In other words, the arts became a form of propaganda to assert influence on foreign nations (Laurenti 1994: 82). In 1670s, Louis XIV ordered Pierre Beauchamp, his ballet master, to devise a method of dance notation (de Moroda 1967: 452, Foster 2011: 18, and Laurenti 1994: 82). Foster helpfully contextualises the emergence of Beauchamp-Feuillet notation as part of a wider concern for knowledge

⁷⁰ The identity of the rightful inventor of this notation was the subject of controversy. For an account of this, and of how Beauchamp filed for infringement of his work, see de Moroda (1967).

classification and taxonomies in fields such as botany and finance (2011: 23). The standardisation and organisation of dance steps provided the conditions for written scores to legitimise and authenticate dances, meaning that standards appeared that could be used to pass judgement on dance. Written dance set forth the criteria for technical skill and study and served to validate some forms of dancing and exclude others (Foster 2011: 16). Foster suggests that,

Arbeau had anticipated these new foundational principles by specifying some of the positions to which the body should return between movements, however, Feuillet's analysis detailed an entirely new level of specificity. (2011: 23)

In establishing the standards of dance, a vocabulary emerged that was agreed upon and consistently used. Laurenti argues that this was a necessary step in unifying "a vocabulary of steps with diverse origins" and arriving "at a kind of universal language of dance" as it helped to enrich and evolve the tradition of ballet (1994: 91, 87). It is important to recognise, however, that this "universal" notation system was possible because it only needed to notate what the feet were doing. This is because, as in Arbeau's time, the movement of rest of the body was already known as part of the socially-codified catalogue. Certain kinds of information were privileged and expected to constitute internalised knowledge for all dance participants, making its documentation unnecessary.

The Beauchamp-Feuillet notation emerged at the culmination of the Renaissance dance that originated with Arbeau and lasted until the end of King Louis XIV's reign. It fell into disuse following the French Revolution (1789–1799) with the demise of the French aristocracy, which meant that court dance fell out of fashion and the simpler English country dances gained in popularity (Hutchinson Guest 1984: 66, Hutchinson Guest 1989: 22, Laurenti 1994: 81, Goff 1995: 202, and Farnell 2005: 147).⁷¹ Hutchinson Guest (1984: 67) proposes that this resulted in a point in history where "Books were no longer connected to the physical activity of dancing," indicating a transition from the score as an authoritative site of knowledge that originated before the dance came into physical existence towards a more responsive artefact with the dance dictating what was written.

The ability to circulate dance in the form of a notation score lessened the need for personal instruction and body-to-body transmission. Court dances were "choreographed" by dancing masters who wrote scores as they sat at their desks—scores which were then sent for judgment and classification in Paris

⁷¹ For a detailed account of the relationship between French and English dance in the eighteenth century, see Goff (1995).

(Laurenti 1994: 86). The term *choreography* is attributed to Feuillet, who used it to refer to dance notation: "To choreograph is, originally, to trace or to note down dance" (Louppe 1994: 14). Foster (2011: 16) identifies that the definition was last used by Rudolf Laban in *Choreutics* (2011), originally published in 1966. For Western stage dance, the term has since evolved to refer to the act, or process, of composing and creating dance work. This suggests that, before notation and dance diverged, notation was a pre-structural tool meaning that notating dance was similar to the composition and simultaneous notation of music. Notation also "served as an instrument for communication and elaboration within the milieu of dancing masters" (Laurenti 1994: 84, 86). For the first time, gifted ballet masters could sell their work (de Moroda 1967: 450).

Renaissance dance scores are thought to have been read "as fluently as music notation or ordinary writing" (Laban 1954 cited in Hutchinson Guest 1974: xiii) meaning that society, or the educated classes, could be alerted to the latest developments in fashion and the art of dancing (Foster 2011: 18).⁷² While this may seem remarkable given that so few dancers and choreographers today are able to read and write notation, Hutchinson Guest explains: "The need for instruction at court and for the educated classes, the importance of dancing masters, and the desire for new dances provided the climate in which a practical system of notation could flourish" (1984: 62). In other words, the notation was born out of necessity and continued to be used until it was perceived as being no longer fit for purpose.

The widespread adoption of Beauchamp-Feuillet in England and northern Europe meant that "new collections of dances in notation form were distributed annually through the 1730s" (Foster 2011: 18), controlling what dances were available to perform and, thus, what was collectively known about dance. Its success also meant that the capacity and limitations of the system could be tested as ideas about dance evolved. It became possible to see what the notation was capable of documenting, where it fell short, and what could be developed or added when elements were perceived as outdated and no longer fit for purpose. Subsequently, Laurenti explains, the Beauchamp-Feuillet system "was the object of numerous rewritings throughout the eighteenth century, with additions and updates to fit current tastes" (1994: 84). The French ballet master and creator of *ballet d'action* Georges Noverre was reportedly suspicious of the Beauchamp-Feuillet system, as he believed there were aspects of dance that could never be grasped,

⁷² The widespread ability to read dance notation was not without controversy. J.P Menetrier, "a writer in the manner and morals of the French court [...] complained that on the night tables of the ladies one could find many more choreographies than Bibles" (Laban 1954 cited in Hutchinson Guest 1974: xiii).

fixed in notation, or written about and that it was "incapable of capturing stage action, particularly facial expressions and grouping of bodies" (Foster 2011: 35). In his *Letters on Dancing and Ballets*, Noverre writes:

If these great composers [of the past] had at least bequeathed us their ideas and the principles of their art; if they had set forth the laws of the style of which they were the creators; their names and writing would have traversed the immensity of the ages and they would not have sacrificed their labours and repose for a moment's glory. (1760: 10 [punctuation in original])

Here, Noverre expresses regret at the loss of dance knowledge. The notational decision to focus on steps meant that the style and expressive quality of dance was not recorded and became forgotten. Noverre proposed to supplement the notation with drawings to augment what could be captured in dance documentation (Laurenti 1994: 86, 105).

French dancing master Pierre Rameau proposed amendments to the Beauchamp-Feuillet system "to give [...] an explanation so easily understood that it can be used by everybody" (1982: 14). Rameau's modifications, which were published in *Abbregé de la nouvelle methode dans l'art de ecrire ou de tracer toutes sortes de danses de ville* in 1725, sought to heighten precision. However, the additional information and the fleshing out of notation signs in fact made the notation read less clearly, and, allegedly, Rameau's amendments were deemed unsatisfactory by the Academy (Laurenti 1994: 84).

In contrast to Noverre and Rameau, Hutchinson Guest reports that the Italian dancer and choreographer Gaspare Angiolini (1731–1803) "found Feuillet's system quite satisfactory as it contained all the principles of the ballet of the period" (1984: 67). These contrasting views concerning the capability of notation at a particular time identify how a notation system tied to a particular kind of dance has limitations when ideas evolve. It seems that notation systems must have the potential to adapt and innovate according to the demands of their users or risk limited application and subsequent disappearance. This indicates a narrative of dance history that is both technological (what mnemotechnics are able to do) and social (the demands of the dance community).

Beauchamp-Feuillet notation became "the departure point for a host of subsequent publications that refer back to [...the] system for over a century, either to use it, to perfect it, or to criticize it" (Laurenti 1994: 81), and it lives on in some of the notational endeavours of early twentieth century dance practitioners. Laban, for example, who was also inspired by Noverre (Preston-Dunlop 2008), was attracted

to the Beauchamp-Feuillet system because of its "rational observation of dance movement" (Laban 1975: ix). He adopted some of its principles to form the basis of his own system, including the division of the right and left body halves in representing movement, the metric division of time, and directional signs (Laban 1975: ix). In gratitude, Laban's first publication about notation, titled *Choreographie* (1926), is dedicated to Beauchamp and Feuillet.⁷³

Notated, written, and pictorial representations of movement are necessarily incomplete. They evidence what features of dance an individual or community of users felt was important to record. Fixed representations of dance provide access to a non-lived past—access to knowledge of the past that the reader has not lived nor experienced—albeit only in partial form. The grammatisation process of notation, writing, and drawing translates temporal activity into discrete spatial and visual units, meaning that they result in fragmentation. In some instances, the interpretation of mnemonic records depends on the format through which the collective knowledge of dance is passed on from generation to generation. Letter code systems, for example, provide access to the sequence of dance steps, but the performance style of these steps rests on access to social etiquette that was not captured in the notation. Where prior knowledge is expected and assumed, body to body transmission may be the primary method of transmission. Dance knowledge transmitted through bodily forms can become lost, therefore, when ideas about dance change unless efforts are undertaken to preserve oral history. The drawings in Arbeau's *Orchésographie*, for example, provide difficulties for the interpretation and reconstruction of dance, because they capture static positions and postures and do not convey details of motion, transitions between movements, or performance style.

Difficulties in accessing dance knowledge from the past leads Hutchinson Guest to argue for the necessity of scholars, notators, and dancers to "describe dance movements in the fullest possible detail, as if for the totally uninitiated" thereby helping to avoid any ambiguity, imprecision, and divergent conclusions

⁷³ Madge Atkinson is another twentieth century practitioner who studied Beauchamp-Feuillet. Atkinson's personal notebooks, housed at the NRCD, identify both an interest in ballet masters of the past and her requests for books from dance historian and critic Cyril Beaumont (1981–1976) to aid her studies. Atkinson references Arbeau, who she believed wrote not only the earliest but the most interesting book on dance, and Noverre, who first introduced her to mime (Atkinson n.d: 17). Nevertheless, Atkinson believed that dance was too ephemeral to capture on the page (Heyworth 1975: 2), opting instead to capture her ideas through a mixture of writing and a notation shorthand tailor-made for her natural movement practice.

reached by those without pre-existing knowledge of the documented practice (1989: 11).⁷⁴ Nevertheless, it is important that documentary methods strike a balance between complexity and simplicity (or usability), and comprehensibility and efficiency if they are to have widespread practical application for dance. It ought to be acknowledged that all notational efforts are incomplete, and this changes according to the technological, social, and artistic context, suggesting that what is important to artists and researchers today is different to those of an earlier age.

Twentieth Century Notation Systems

The standardisation and codification of dance continued into modernity, but rather than being driven by the academy, as was seen in the political desire of the French court to be the leaders of the industrialised world, twentieth century notational developments were driven by the needs of dance practitioners. Contrary to the homogenising effect of the Beauchamp-Feuillet notation, systems such as Labanotation, BMN, and Danscript—which will now be discussed—were intended to free notational systems from a reliance on a single movement idiom. They also aimed to document all kinds of human movement and to traverse language barriers. They each embody movement ideologies of their inventors and those who contributed to their development.

Advocates argued that notation would be as beneficial to dance as it is to music, that it would reignite a reading public and expedite dance education (Bedford 1955, Hutchinson 2005: 6, and Simpson 1930: 20-21), enhance audience appreciation (Falk 1968: 408), enable the copyrighting of choreographies (Mason 1956a: 35), allow international communication (Hutchinson Guest 2005: 5), and allow dancers to learn their parts in advance of rehearsals (Benesh and Benesh 1969: 4, Benesh and Benesh 1977: 3, and Mason 1956a: 35). These perspectives engender an understanding of the notation score as an authoritative container of movement knowledge that can be used to serve a variety of purposes. Despite best intentions, no single method of movement notation has been embraced by the Western dance community, and notation is not as ubiquitous as many advocates hoped it would become.⁷⁵

⁷⁴ While the motive for this can be appreciated, the labour involved is the very same labour that dissuades a significant majority of the dance community from using notation.

⁷⁵ The recent surge in Labanotation in France counters the trend (see Challet-Haas, Cottin, and Simonet 2015-2016).

In defence of the limited uptake of codified notation systems, Hutchinson Guest makes a comparison to Western music notation. She explains that it took approximately 700 years from its conception until it was established as the form that is recognised today, which was "codified as recently as the seventeenth and eighteenth centuries" (Hutchinson Guest 1984: 4 and Hutchinson Guest 2005: 1). If this were to be taken as an estimation for the widespread adoption of movement notation, then it would not be until the late twenty-second century, 150-200 years from now, that such a system would emerge. The unlikelihood of this brings me to examine the context of current and existing notational technologies as the basis for the emergence of video annotation as an alternative method of analysis. Subsequently, I do not propose that annotation will replace dance and movement notation, but that it contributes to the trajectory of dance analysis.

Labanotation

At the turn of the twentieth century, Laban's first use of notation was intended as a personal mnemonic device. He writes:

Fully a quarter of a century before the first publication of my system, I began to experiment with the idea of writing down movements as one writes words or music. Initially I had nothing more in mind than to record for my personal use, by a few meaningful scribbles, the steps or gestures I had invented, mainly for my large orchestral dance compositions. (Laban 1956: 11)

Here, Laban's use of the term *choreography* refers to notation, as in the Renaissance. Concerned with the state of illiteracy in dance,⁷⁶ Laban set about creating a movement notation. Recognising the enormity of the task, he is reported to have said:

I would be pleased if someone had relieved me of the labour of "creating" choreography. I would then have time for better things. But there is, sadly, no prospect of this. (Laban in McCaw 2011: 98)

Laban specified the need for a graphic language for the comprehensive documentation of dance, stating that, "dance-thinking, or the thinking connected with movement, is almost diametrically opposed to ordinary thinking, thinking connected with words" (1971: 11). Feeling that "words can never be entirely adequate in dealing with the changing nature of the subject before us," Laban sought to create a grammar and syntax that was capable of "dealing not only with the outer form of movement but also with its mental

⁷⁶ At Laban's *Choreographisches Institute,* students were not allowed to specialise in any one subject, and notation was taught alongside all other aspects of dance training (Preston-Dunlop and Lahusen 1990: 26). The integration of theory and practice is a key aspect of Laban's vision for dance literacy.

and emotional content" (Laban 2011: viii). It is for this reason that dance scholar Suzanne Youngerman rightly suggests that, contrary to popular notions, Laban's notation did not emerge through the necessity of writing dance on paper alone, but also in an effort to understand movement principles (1984: 105). He sought to consciously master movement and "to find its real structure and the choreological order within it through which movement becomes penetrable, meaningful, and understandable" (Laban 2011: viii). For Laban, movement was not only of the body nor the activity of the mind, and he emphasised the importance of body-mind unity (Laban 1971: 23, 35).

What I find interesting about Laban's notation is how it evolved from fulfilling personal mnemonic needs towards a vision of a "universal" system for dance, and its development into the system known today has been documented by various dance scholars (Hutchinson Guest 1989, Preston-Dunlop and Lahusen 1990, and Preston-Dunlop 2008). It was not a system that was complete when it was first conceived but was developed and refined throughout the twentieth century, and changes are still made to the system today.

Dance scholars Valerie Preston-Dunlop and Susanne Lahusen explain that in the first conceived layout of Laban's notation, published in Choreographie, he had yet to solve the problem of writing movement as continuous motion on paper. The score consisted of a series of crosses sat side by side: the vertical line for each represented the midline of the body, and the horizontal line represented the division between upper and lower body halves (Preston-Dunlop and Lahusen 1990: 25).⁷⁷ In the four spaces that the crosses provide, indications for movement were recorded using a letter-based system. This approach meant that it was not possible to represent the continuous motion of the body in linear time but only as a series of discrete actions (Preston-Dunlop and Lahusen 1990: 25). Laban and his colleagues gathered to find a solution. Kurt Jooss proposed the change in design of the stave from the series of crosses with four compartments, to vertical lines with four columns (Preston-Dunlop and Lahusen 1990: 25), meaning that symbols, which could be elongated to show the duration of movement, could be adopted instead of letters, a suggestion from dancer Dussia Bereska. Bereska also "had a deciding influence on the rhythmical partitioning of Feuillet's metrical bar-line intervals" which were included as part of the notation stave (Laban 1956: 7). The four vertical columns allowed the simultaneous movement of different body parts and indication of their individual movement phrasing to be documented (Preston-Dunlop 2008: 131-132). This feature saw the birth of the Labanotation system that we know today, albeit in a more basic format.

⁷⁷ This cross later became the basic framework for Laban's Effort notation (Laban 1954: 8).

The new design of the notation system meant that Laban had to compromise on his vision of depicting movement progressions and trace forms⁷⁸ in his notation⁷⁹ because movement was instead recorded as a series of positions that were passed through. This compromise was necessary because the notation could only transmit insufficient knowledge of movement pathways, unless the notation reader knew in advance the movement documented in the score (Preston-Dunlop and Lahusen 1990: 25 and Preston-Dunlop 2008: 131-132). This, in effect, would make the notation unworkable, requiring prior knowledge of the dance in order to read the score.

The developments made to Laban's notation after the initial framework was formulated are just as interesting because they were initiated by different people. The notation was developed in the USA by Hutchinson at the Dance Notation Bureau, in the UK by Jooss and Sigurd Leeder (1902–1981),⁸⁰ and in Germany by Knust:⁸¹ three different characters adopting different relationships to the dance—a dancer, choreographers, and the first specialist notator in the Laban system. The geographic and political separation between Germany and England during the Second World War made it difficult for Hutchinson, Jooss, Leeder, and Knust to share their developments and ideas about the notation and it was not possible to communicate developments via written correspondence for fears that the notation symbology would be seen a secret language for espionage (Knust 1963a). Knust travelled regularly to England to consult Jooss, aware that developments by different people would result in divisions in the system and thus limit its universal application. In the post-war years, attempts at unifying the system were first undertaken by written correspondence and then in the founding of the International Council for Kinetography Laban/Labanotation (ICKL), where notators today continue to meet every two years to discuss developments in the system.

Further to discrepancies in application, there was also disagreement in how Laban's system should be named. According to Preston-Dunlop (2008: 247), Hutchinson proposed to refer to the system as "Labanotation," but this suggestion was disliked by Laban. Correspondence housed at the NRCD

⁷⁸ *Trace forms* is a Choreutic concept that refers to the pathways that the limbs trace in the space around the body. ⁷⁹ According to Laban, dance "architecture is created by human movements and is made up of pathways tracing shaped in space, and these we may call 'trace forms'" (2011: 5).

⁸⁰ Leeder made amendments to the notation, creating additional signs to accommodate his dance technique and choreographic style.

⁸¹ Knust made developments to enable the choreographic use of canon to be documented on a single score, rather than having to document each dancers' role separately (Preston-Dunlop 2008: 165). This development in notating group work was particularly important for the realisation of Laban's large-scale movement choirs, the biggest of which was presented in preparation for the 1936 Berlin Olympics (Preston-Dunlop and Lahusen 1990: 27).

documents disclose this disagreement, which also involved Knust (see Hutchinson 1963, Knust 1963a, and Knust 1963b).

Benesh Movement Notation

The inspiration for BMN emerged from the recognition that dance had no written language of its own (Benesh and Benesh 1956: 7 and Hall 1964). Joan and Rudolf Benesh felt that, "the most pressing need [for a notation] was to record for preservation important ballets and dances before they became irretrievably lost to the world" (1977: 6). Former dance critic and headmaster of The Sadler's Wells School (now The Royal Ballet School) Arnold Haskell (1903–1980) explains that ballet had "been highly suspicious of an aid to learning except through balletic phenomenon of 'muscular memory' and a few personal mnemonics" until the emergence of BMN (in Benesh and Benesh 1969: 1). In other words, knowledge was passed from generation to generation through body-to-body transmission and, presumably, choreographers' notes to support and embellish memory. Benesh and Benesh believed their system of notation to be a practical answer to the needs of the dance world as it records movement "based on what is actually seen" (1956a: 5, 6).

BMN has been compared or likened to stick figure notation (Hutchinson Guest 1989 and Martin 1957), yet this is argued to be misleading as it ignores the basic principles of the system which aim to "show the paths of movement of the extremities in three dimensions" (Green 1968: 481). The notation symbols are simple and quick to write and read and do not need translation, meaning that, according to Benesh and Benesh, reading dance is an easily acquired skill (1977: 2-3). Nevertheless, a system that emphasises speed and efficiency means that only the bare minimum of information of the dance is recorded. This implies that prior knowledge of the tradition and standards of ballet is required, and not everything that should be known is contained in the notation score. This is acknowledged by Benesh and Benesh, who explain that the reader already versed in the language of classical ballet will be at an advantage for understanding the grammar and assemblage of BMN symbology (1977: 3). This is particularly interesting, because it indicates a system tailored to classical ballet, a point that Benesh and Benesh (1956a: 5) contest, stating, "In devising the system I looked upon it as a pure movement notation with no consideration other than it has to cover every possible movement of a human being."

BMN was immediately adopted by The Sadler's Wells Ballet where it was tried, tested, and developed to suit the needs of notators, referred to as choreologists (Benesh and Benesh 1977: 6 and Hutchinson Guest

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1989: 64). The adoption of BMN notation by Sadler's Wells was a seal of approval that appears to have been instrumental in its success. Nevertheless, Dame Ninette de Valois' (1898–2001) official stance was one of distance.⁸² In a statement rebutting Laban's alleged claim that his notation had been adopted at Sadler's Wells,⁸³ de Valois (1956) wrote:

Time and the dancer alone will decide which of the existing notation methods will prove to be the most practical for the classical ballet to use. At the present stage, I am an onlooker: I feel sure that dancers are being offered unusual facilities, in many directions, to take up these various forms of notation-study. Some of these systems are in a position to state a claim of many years standing—but it is clear that sooner or later one particular system will have to obtain a more widespread hearing than has been fortunate of any of them to date.

The Institution of Choreology was founded in 1962, boasting Sir Fredrick Ashton (1904–1988) as President and Dame Margot Fonteyn de Arias (1919–1991), Dame Marie Rambert (1888–1982), Dame Ninette de Valois (1898–2001), and Tamara Karsavina (1885–1978) amongst its patrons. The notation was considered such as success that it featured in the 1958 Universal Exhibition held in Brussels in the British Government's exhibition of important scientific and technological developments (Anon 1985). BMN became a recognised notation system for ballet, and the number of professional Benesh choreologists increased year by year (see Table 4, p. 106).

Following its invention, BMN found itself at the centre of a heated debate concerning its efficacy in comparison to Labanotation as a rival method. A particularly damning response came in 1957 from *New York Times* dance critic John Martin (1893–1985), who referred to BMN as a "primitive method of 'stick figures'" and described the decision to adopt BMN at The Sadler's Wells School in 1955⁸⁴ as propaganda from the British Government, the British Council, the Commonwealth, and the Ministry of Information.⁸⁵

⁸² de Valois was one of the most influential dancers in the history of ballet. She was a dancer with Diaghilev's Ballet Russes before establishing The Royal Ballet Company in 1931.

⁸³ de Valois states that Laban claimed this in *Principles of Movement and Dance Notation* (1954), but I have found no evidence of such a claim.

⁸⁴ In the same year it was also adopted by the Elmhurst School of Ballet, the Phyllis Bedells School of Ballet, and the School of Russian Classical Ballet (Anon 1985).

⁸⁵ A transcript of Martin's article can be found in Appendix C.



Table 4: Number of professional choreologists (BMN) between 1960 and 1985 (Anon 1985).

Margaret Morris and Danscript

Like many who came before (and after) her, Morris believed that dance should have a notation system to rival that of music and felt "that there is an urgent practical need for a universally accepted method of notation" (Mason 1956b: 30). For Morris, the development of a suitable and efficient method of notation was a lifelong endeavour. Her method of notation, Danscript, was published in *The Notation of Movement* in 1928, after which she continued to develop and make amendments to the system until her husband's death in 1961. Hutchinson Guest refers to the system in her comparative studies of notation (1989: 111-113 and 1984: 79-81), but the existence of Danscript is not well known by dance scholars, and Martin appears incredulous that Morris's "highly original system [...] was allowed to elapse into obscurity" (1957). The obscurity of Danscript today is not helped by the fact that a complete account of the notation in its final form does not exist. This makes Morris's personal notebooks, housed at the archive at the Fergusson Gallery in Scotland, such valuable primary resources, as they show developments in her thinking and movement conceptualisation between 1952 and 1969 as well as her attitudes towards other notation systems.⁸⁶ Danscript offers a valuable contrast to Labanotation and BMN, as it received some recognition during Morris's career yet is largely overlooked in the discussion of twentieth century movement notation.

⁸⁶ These notebooks are discussed in the next chapter.

For this reason, I will introduce Morris and Margaret Morris Movement (MMM) before returning to the discussion of Labanotation, BMN, and Danscript.

Writing in *The New York Times* (1954a) to publicise Morris's Jacob's Pillow⁸⁷ debut, American Dance pioneer Ted Shawn (1891–1972) describes her as a "revolutionary figure in the world of education" and "the pioneer in England of what was to be known much later as modern dance." Hutchinson Guest describes Morris as a pioneer of dance, movement therapy, and pre-natal care (1984: 1). Morris was listed as a key societal figure in the 1955 volume of *The Biographical Quarterly* (1955), which contains information about noteworthy citizens of English speaking countries, and her work reached beyond the dance community and "was taken up by the British Army and was taught at the Army Training School at Aldershot" (Hastie and Anderson 1985: 7).⁸⁸ Despite professional acclaim, however, Morris is a figure who appears to have all but disappeared from the canon of British dance history. Her mark on British modern dance was overshadowed by the influences of Tanztheatre from Europe and American modern dance.

Born in 1891, Morris was "an infant prodigy [... who] was much in demand [as a young girl] at society smoking concerts and Court drawing rooms for her recitations and speeches of Shakespeare's heroines" (Hastie and Anderson 1985: 5).⁸⁹ She started ballet training at six years old under the tutelage of John d'Auban (1842–1922) at the Drury Lane Theatre in London,⁹⁰ but, believing that ballet could evolve along more interesting lines, started to rebel against the rigidity of classical ballet at the age of 12 (Daniels and Morris 1926: 84 and Hastie and Anderson 1985: 5). With the help of her benefactors John⁹¹ and Ada Galsworthy (1867–1933 and 1864–1956), Morris opened her first dance school in 1910, which has been described as a "mecca for artists in London" (Hastie and Anderson 1985: 6).⁹² Here, she started to devise her own movement methodologies and began to teach what would become Margaret Morris Movement

⁸⁷ Jacob's Pillow is a yearly dance festival in Massachusetts, USA. For more information, see Jacob's Pillow (2018).

⁸⁸ Morris wrote the article 'Basic Physical Training' which was published in 1936 in *The Journal of the Army Physical Training Staff* (Hastie and Anderson 1985: 35-39).

⁸⁹ Smoking concerts were live performances for predominantly male audiences in the Victorian era.

⁹⁰ d'Auban was an English dancer, choreographer, and actor and was most famous as ballet master at the Theatre Royal, Drury Lane, and as choreographer for the Gilbert and Sullivan operas. d'Auban's emphasis on the "'grace' and 'flow' of movement," Morris explains, was not approved by ballet purists (2003: 6).

⁹¹ Galsworthy was an English novelist who won a Nobel Prize for Literature in 1932. He is best known for *The Forsythe Saga* (1906–1921). Morris was in love with Galsworthy and wrote, "I feel that although he could never be the father of my child, I can claim him as the father of my Movement, which is my only child" (2003: 13 [capitalisation in original]).

⁹² Amongst others, the dance school attracted actress Phyllis Calvert (1915–2002), artists Edward Wadsworth (1889– 1949) and Jacob Epstein (1889–1959), writer Erza Pound (1998–1972), and musicians Constant Lambert (1905–1951) and Eugene Goossens (1903–1962) who played for school performances (Hastie and Anderson 1985: 6).
(MMM), which she envisaged as a more free kind of training than ballet. Throughout her career, Morris aspired to create a ballet native to, and harmonious with, Scotland, rather than one "that has its origin in the artificial dances of the French Court" (Morris 1958a: 11 December). Morris formed the Celtic Ballet, which was later named the Scottish National Ballet.⁹³

Morris felt the need for basic physical training to harmonise the mental and physical spheres of the body. This arose from her observation of the imperfection of the human body, which had been physically restricted and weakened through industrialisation "due to the bad environment and adverse conditions of life imposed by our civilization" (1930: 5). Believing that "dancers trained in the old methods [of ballet] were worse than useless" for her technique, Morris spoke of the need for a "new race of dancers" (Daniels and Morris 1926: 3-5).

Meeting Isadora Duncan's brother, Raymond Duncan, in 1909 was a pivotal movement for Morris that made her "realise the latent possibilities in dancing, by starting from a simple and natural technique instead of a purely artificial one hampered by endless conventions" (1925: 22). The purely artificial technique that Morris refers to here is ballet, and this was not an uncommon viewpoint in early modern dance. There was, for example, a belief that ballet "was in need of fresh inspiration and new life" (Ginner 1960: 16). Founder of Greek Revived Dance Ruby Ginner (1886–1978) reflects on this:

The conventional form of the ballet of that time was too limited a medium for an age in which all the arts were seeking for greater freedom of expression. Life was broadening out in every direction, conventions were being broken, old formulas cast aside, a new world was beginning, and the dance, like all the arts, went exploring for fresh ways with to express this urge for freedom. (1960: 16)

Morris observed that the six Greek positions Raymond Duncan taught used every muscle in the body, providing control and balance for the dancer (2003: 10). At the same time, she felt that these positions could not form a strong enough basis for training modern dancers (Pfister 1983 and White 1980: 15). Morris writes that Duncan was "more interested in the reconstruction of the Greek dance, as he imagines it to have been, whereas I am more interested in the construction of a new and living form of dance"

⁹³ According to Morris, these names met with opposition from the ballet community because she was not working with ballet. In her defence, Morris states that, "The Ballet Jooss did was not classical ballet, yet they had been touring under that name for many years without question" (2003: 118).

(1925: 22).⁹⁴ Morris set about developing her own method that drew inspiration from her training as a physiotherapist.⁹⁵



Figure 9: A drawing in one of Morris' *Morning Books* of the five positions of the feet in classical ballet and for MMM (Morris 1958a: 9 December). Image reproduced with kind permission of Margaret Morris Movement International.

Morris's husband, Fergusson, reportedly saw potential in combining the framework of classical ballet with more free movement, having been inspired by Serge Diaghilev's (1872–1929) Ballets Russes (White 1980: 15). This influence can be seen in ideas for MMM such as the appropriation of ballet's "five positions of the feet," for which she replaced the "eccentric convention of

turning the feet out at right angles" (Daniels and Morris n.d.: 4) with a parallel rotation of the legs (Figure 9). Morris viewed the barre work from classical ballet as unnecessary because the ground gives sufficient resistance for movement and so replaced this with Raymond Duncan's Greek positions (Morris 1958a: December 15 and Morris 1959d: 7 February).

Morris argued that, "technique exercises were essential to form the body into a creative instrument for the dancer" (Hastie and Anderson 1985: 5) and claimed that early modern dance pioneers such as Laban and Jooss had "<u>no</u> basic technique on which to build!" (1967: 7 October [emphasis in original]).⁹⁶ MMM, which is still taught today (see Margaret Morris Movement n.d.), is a highly structured syllabus comprised of a series of levels through which students could progress (Layson 1987: 130). It consists of seven general movement principles (balance, suppleness, spring, agility, dramatic ability, strong and soft qualities, and co-ordination) and a further seven unique movement principles (breathing, joint alignment, body

⁹⁴ In her interview notes for BBC Glasgow, Morris explains that the origins of MMM is in the "primitive natural expression" of folk dancing (1959b: 5 February).

⁹⁵ Morris was interested in the remedial aspects of movement for everyday health and wellbeing, which paved the way for a method of dance movement therapy that she referred to as *Danstherapy*. Morris gave lecture demonstrations to doctors in London in 1925 and in Paris in 1926, and her methods were adopted in London St Thomas's hospital massage school. Morris became a qualified physiotherapist in 1930 (Hastie and Anderson 1985: 6). In 1936, "she published *Maternity and Post-Operative Exercises*, arguably one of the first publications written specifically on dance and movement therapy" (Hastie and Anderson 1985: 7).

⁹⁶ Unless otherwise stated, I retain Morris's cursory writing style and spacing for direct quotes from her *Morning Books*, which do not fully adhere to proper grammatical conventions.

mobility, opposition movements, weight control, continuity, and conveyance) (Morris 1953: 9 October and Morris 2003).

In the early years of her professional practice, Morris adopted a shorthand notation system devised by Raymond Duncan. She explains:

Duncan recorded the Greek positions he used with lines giving a diagrammatic representation of the position of the arms, this was quite satisfactory as they were always done in profile, and the position of the feet and legs was always the same. (Morris 1928: 8-9)

I have not been able to retrieve a full and explicit account of Duncan's notation amongst primary sources in Morris's archive collection, however, an unpublished manuscript housed at the NRCD (Johnstone and Atkinson n.d.), shows that her contemporary Madge Atkinson also used Duncan's notation to document her Natural Movement practice.⁹⁷ Perhaps paradoxically for an approach that espoused natural, free, and expressive movement, and that considered itself to be "the antithesis of ballet" (Carter 2011: 18), the notation supported the systematisation of Atkinson's practice. Dance scholar Alexandra Carter, whose *Constructing and Contesting the Natural* focuses on Atkinson and Ginner, suggests that codification "evolved from a variety of cultural conditions," including "the need for them [dance techniques] to be recognized as a viable and respectable art, to resist the oft-cited charges of amateurism," and for their uptake in British schools⁹⁸ and by the Imperial Society of Teachers of Dancing (Carter 2011: 18, 19, 21).

Atkinson's manuscript lists shorthand notation for three codified positions of the arms: the straight line, the V, and the double line, each of which had six variations. The symbols used to represent these positions are figuratively simple (see Table 5, p. 111), but they are accompanied by a complex key that stipulates the direction of the eye line in relation to arm positions, the thought should be expressed in the position, and information for achieving a clear opposition in the body, an example of which can be seen in Table 6

⁹⁷ Morris had direct contact with Duncan, whilst Atkinson learned about his work through her teacher Annea Spong (1871–1957) who had met Raymond Duncan (Carter 2011: 19).

⁹⁸ "Atkinson's dance form was valued for its educational benefits and filtered through Manchester schools until the late 1930s" (Carter 2011: 21). While continuing in private schools, Atkinson's practice became hidden behind "Laban's Modern Educational Dance which, although systematized on a conceptual basis, still relied in practice on notions of the natural in its assumptions that the child will dance spontaneously" (Carter 2011: 28). This implies that the standardisation of natural movement techniques, in part, paved the way for more free forms of dance. *Margaret Morris: A Prophet Without Honour* (White 1980) is a comparison of the movement systems devised by Morris, Ginner, Laban, and Ling to ascertain why MMM did not achieve prominence.

(p. 112). The level of detail that accompanies each symbol indicates that knowledge of movement technique, style, and performance is required for properly using the notation.

Morris utilised Duncan's shorthand for the documentation of the Greek movement in her syllabus but experienced limitations in its application to other kinds of movement. She wrote:

When I tried to apply the same method to other positions where the arms were stretched towards—or obliquely to—the audience, the position has to be *drawn* in profile, and then a new sign made to indicate that it was not performed as it *looked*, but facing [the] audience, which was very confusing. (Morris 1928: 8-9 [emphasis in original])

This indicates that the shorthand works best when used to record the Greek positions for which it was designed. Morris later made amendments to suit her own dance practice by adding signs for the legs and feet, and indications for directions (Morris 2003: 147) and was recognised for this in British newspapers including *The Daily Sketch* (1919) and *The Daily Chronicle* (1913).⁹⁹

	1 st position	2 nd position	3 rd position	4 th position	5 th position	6 th position
Straight line	-	<u><</u>	1	5/	/	4
v	٨	A	V	V	٧	٨
Double line	E		6	n	~	5

Table 5: Duncan's shorthand asused by Atkinson in DancingBased on Natural Movement(Johnstone and Atkinson n.d.: 61-79)

⁹⁹ Morris's shorthand notation, reportedly, also featured in *The Daily Mirror, The London Opinion, Tatler, Vogue*, and the *Westminster Gazette*.

Table 6: The explanation of notation symbols for movement of the V, which correspond to the symbols in Table 4 (Johnstone and Atkinson n.d.: 78).

1 st position	"The first position is taken by lifting the hands up to shoulder level and then describing the design by taking the arms down through the line of design until the \land is obtained, one arm in front and the other behind, the front hand being about an inch above the front knee. The thought expressed by this design is of the downwards direction, therefore the head inclines downwards looking at the front hand" (Johnstone and Atkinson n.d.: 78). This is taken from the natural position of the arms when walking (assumed that the walk adopts a contralateral pattering).
2 nd position	Second position is the same as the first but looking backwards. The arrow included here is missing from the manuscript. I have it inserted here in keeping with the patterns in symbology for the position of the straight line and double line.
3 rd position	"The head should be tossed back, looking above the front hand" (Johnstone and Atkinson n.d: 78).
4 th position ∛	Fourth position is the same as in third position but looking backwards. Similarly to second position, the arrow is missing from the manuscript draft, but it is included here.
5 th position	"The top arm is in opposition. The back shoulder must be kept well back therefore the line formed by the bottom arm cannot possibly be as long as that of the top arm. It must go forward describing the line of design as much as it is capable of doing with the shoulder keeping back. Care must be taken to keep the angle of the < exact, otherwise it may be confused with the position of the double line" (Johnstone and Atkinson n.d: 78).
6 th position	"The opposition arm in this case is the lower one which can only be very short in its line of design as it has to cross the body from the front until it reaches the back. The back arm is up behind in exactly the same angle as the back arm in the 6 th position of the straight line" (Johnstone and Atkinson n.d: 78).

Morris began to feel that movement notation could not be pictorially representative if it was to be successful (Morris 1928: 9 and Morris 2003: 147). Arguing that, "It is comparatively easy to invent a system of recording any one method of dancing," Morris was determined to develop a notation system applicable for documenting all kinds of human movement (1928: 7). Morris reflected that her "own method only began to be practical when I ceased to make signs to resemble the positions they stood for; the mind quickly learns to visualize the position from the symbols written" (1928: 9 [emphasis in original]). A reviewer for *Dance and Dancers*, E.C. Mason,¹⁰⁰ who attended Morris's presentation at the British Dance Notation Society,¹⁰¹ explains: "She is interested in painting and from this she has derived an idea that the symbol should show some feeling for the movement it represents" (1956: 30), possibly an influence from her husband who was a painter. In Danscript, forwards motion is indicated by a forwards sloping dash (/) which, Morris proposes, is easy to write quickly for the righthanded scribe. A backwards sloping dash () was initially used to indicate backwards movement, but Morris felt this would be too cumbersome as it would require a change in the direction of writing, so a horizontal dash (-) was chosen instead. The symbol for sideways motion combines the two symbols (/). These symbols were designed to be written as quickly and efficiently as possible and as easily as writing a sentence (Morris 2003: 148-151).

Perhaps paradoxically, Morris argues that,

any method of notation that tends to crystalize it in its present form, by making certain positions and movements easy to write, would be a very bad thing, as *creation* in movement, involving *new* sequences of positions, and departure from previous conventions is essential. (1928: 8 [emphasis in original])

Departing from Duncan's shorthand, Morris envisaged an assemblage of signs to represent all number of movement possibilities. Nevertheless, despite a career-long commitment to developing Danscript, Morris believed that the only way to perfectly record movement was through film, through which a series of positions could be recorded accurately at high speed (2003: 151).

Ideally, an abstract symbol system that is not tied to any one genre of dance has the potential to progress and adapt to ensure its ongoing applicability for users and developments in dance. For Morris, this was important, because she "always had in mind the *future* development of dancing, [so]

¹⁰⁰ The reviewer writes under the name E.C. Mason, and I have not been able to find more information about their identity.

¹⁰¹ The British Dance Notation Society was founded on May 6th 1956. It aspired to collate all notation activity in a central place, that the editors of *Dance and Dancers* (Williams and Barnes 1956: 22) suggested was, "the ideal solution of a problem which has caused many a heated argument during the past few months." It was formed with the intention of informing the public about notation (Williams and Barnes 1956: 22). Activities included lectures given by Hutchinson, Benesh and Benesh, and Morris (Hutchinson 1956b: 517).

there must be progress and variation to prevent stagnation" (Morris 1928: 7-8 [emphasis in original]). Nevertheless, her aversion to ballet led her to claim that Danscript was most suited to pioneering work rather than the work of ballet masters who created dances constructed "almost exclusively of standard steps and positions, which all have names" and could, therefore, be documented with ordinary writing (Daniels and Morris 1926: 78 and Morris 1928: 7-8). It seems that Danscript was reserved for a particular vision of dance.

In Danscript, Morris avoided "the use of words, or even single letters, so that the notation can be equally well understood by people of all nationalities" (1928: 10 [emphasis in original]), yet there is reason to believe that Danscript symbols alone were insufficient or too complex to learn. When Danscript was published in 1928, it was a comprehensive system, in some ways more so than Labanotation (published in the same year) as it provided symbols for every conceivable movement, including facial expressions, movements of the tongue, and the use of breath. This created a large vocabulary of signs that would require cross-referencing with a Danscript dictionary. In an MMM Newsletter, Leslie Burrowes (1908–1985), a performer and assistant teacher for Morris, wrote, "It is not necessary to memorise the [notation] signs, provided the explanations are understood, which are given in words as well as diagrams" (1930: 34). The assurance that the Danscript reader need not rely on the symbology alone could be attractive to prospective users but implies that either the notation did not efficiently or sufficiently work as intended or that those supposedly advocating for Danscript did not permit or trust it to do its job. With regards to the latter, any lack of trust it is likely to have hindered the adoption of Danscript beyond the intimate circle of Morris, her students and colleagues. Not truly understanding the potential of notation without other mnemonic techniques, such as writing and drawing, does a disservice to its future potential and suggests that the limitations of the system would not be discovered by those using it. I propose that not utilising Danscript as a standalone system is problematic because there must be the opportunity to amend and develop the system to ensure its successful application for documenting movement.

Danscript uses a horizontal stave which was simplified from six lines in 1928 to four lines by 1969 (Morris 2003). The score looks similar to the BMN stave as each row is organised according to body parts. In Danscript, the upper row is reserved for movements of the head, arms, and hands; the middle row for movements of the torso; and the bottom row for movements of the legs and the feet. The notation

is partly based on the limitations of body movement—the limitations of the angles of movement of the arm from the shoulder to the elbow or the leg from the thigh to the knee. It is therefore adjustable to the person reading the notation, which means that one person may be able to go further than that which is the limit for someone else. (Mason 1956b: 30)

Morris was critical of the vertical stave used in Labanotation, arguing that it would be of comfort only to the Chinese, but not the majority of readers who are accustomed to reading books horizontally from left to right (2003: 153). Given the bilateral organisation of the body, Morris felt it was unnecessary to indicate left and right in the notation symbols. Instead, movements for the right side of the body are written on the stave line and the movement for the left side of the body are written underneath it.¹⁰² The time signature is written at the start of the notation score, and the stave is divided vertically into bars and beats to indicate timing. To specify the specific timing for movement, musical notes can be written above the stave (Morris 2003: 147). The use of a horizontal stave, similar to music notation, meant that Morris did not have to solve the problem of representing time, one of Laban's greatest challenges.

Morris was the primary advocate for Danscript, although her colleague Robin Anderson was instrumental in the development of the system. Morris wrote to him regularly for advice on possible changes, and he assisted in the preparation of materials for presentations showcasing Danscript, such as for her lecture for New York's Dance Notation Bureau in 1959 (Morris 2003: 151 and Morris and Anderson 1980).¹⁰³ One of the biggest challenges for Danscript's success was the limited uptake of the system. This can be attributed, in part, to Morris's inability to retain the dancers that she taught and worked with. The success of the MMM in training meant that she often lost her best dancers and those she invested in the most to companies that were able to employ them on a more regular basis (Hastie and Anderson 1985: 7). What is more, Morris argued that these dancers could not be replaced, because they had been trained in MMM "which took at least three years to perfect" (2003: 116-117). The success and employability of the Celtic Ballet dancers was a testament to Morris's training methods, yet this was to the detriment of the success of her company and widespread adoption of Danscript.

Mason (1956: 30) claims that Morris decided to terminate her work on Danscript in the years after its first publication, because "she could find no one to take it seriously and nobody who would continue

¹⁰² This is not dissimilar to BMN, where the right and left feet are placed side by side.

¹⁰³ The transcript for this lecture appears to the most comprehensive and up-to-date source of the system.

to study it." However, a meeting with Hutchinson around the same time as Mason's account seems to have ignited Morris's motivation to develop and publish Danscript.¹⁰⁴ Hutchinson explains that,

after our meeting at Jacob's Pillow in the summer of 1954 when we compared notes, [Morris's] interest was revived and, as a result, she and her associates have made several improvements in the system. (1956: 36)

There are multiple references to Hutchinson in Morris's *Morning Books*, including details of their meetings and correspondence. It seems Hutchinson inspired Morris to continue her work developing and publicising Danscript. Over the years, Morris dreamed of expanding the readership of Danscript and made plans for publications such as: *Danscript for Fun!* (Morris 1958: 4 February), *Happy Families*-style card games for notation practice (Morris 1953: 17 October), a specialist diploma (Morris 1952-1953: 3 January), and a correspondence course (Morris 1958: 4 February). These and other similar ideas appear several times amongst the pages of her *Morning Books* yet do not appear to have materialised.

Morris's active work to develop Danscript was limited because of the pressure of other work, and she regularly wrote about her (in)ability to manage competing professional and artistic interests. Her attention was divided amongst aspirations and ambitions in a number of different areas that included choreography, pedagogy, dance therapy, health and wellbeing, as well as notation. Morris did not experience the same level of loyalty as Laban did from his colleagues and students, nor the institutional backing of a prestigious organisation as BMN enjoyed. Irrespective of limitations in the system, it seems that there were insufficient personal and institutional support and structure for Danscript to prosper.

Competing Movement Notation Systems

Between the years 1955 and 1957 in England, articles in periodicals such as *The Dancing Times* and *Dance and Dancers* aspired towards educating the dance community on the use and merits of twentieth century movement notation systems. Discussions were impassioned, heated, and filled with controversy as advocates from the Labanotation and BMN argued for the superiority of their system. Before this time, Labanotation was unrivalled in stature, partly because BMN only appeared in 1956. Danscript was also part of these debates, but to a lesser extent, a forgotten contribution amongst the force of its "competitors."

¹⁰⁴ The *Morning Books* that have been analysed for this study are dated from 1952–1956, so it is not yet known the extent to which Morris was working on her notation between 1928 and her 1954 meeting with Hutchinson.

A competition between systems appears to have been triggered as there was a feeling that a single notation should transpire that would be widely embraced by choreographers and dancers alike. The first article debating the merits of Labanotation and BMN appears to have been in *The Dancing Times* (Bedford 1955). It was followed by letters to the editor requesting more information about the systems, which were little-known to the wider dance community (Price 1956) and arguing for the need for practical lecture demonstrations that could provide more in-depth information than was possible in writing alone (Hutchinson 1956a). Three articles introducing the basics of Labanotation for beginners followed (Chilkovsky 1955; 1956a; 1956b) and, after The Dancing Times was accused of showing bias towards Labanotation (Hall 1956a: 515),¹⁰⁵ four articles introducing BMN were published (Benesh and Benesh 1956b; 1956c; 1956d; and Hall 1956a). Some of these articles drew comparisons between the efficacy of Labanotation and BMN, while dance scholar Ferneau Hall (1956b: 699) drew attention to the fact that, "Only a relatively small number of people are interested in (or have the time for) research work in a variety of notation systems, well known or otherwise." While it was recognised that those working with the two systems "look at the theory of dance notation through very different pairs of spectacles" (Mason 1956a: 34), it was not yet recognised that the notations serve different conceptualisations of movement.

More than a decade after the debate between Labanotation, BMN, and (to a lesser extent) Danscript appeared in print, a second round surfaced. Once again, notation advocates hoped to raise the dance public's awareness of available notation methods, and in 1968 the *Dancing Times*¹⁰⁶ ran a series of articles starting with a general introduction by dance critic A.V. Coton¹⁰⁷ to the "three best-known [notation] systems of our time": Labanotation, BMN, and Danscript. Labanotation is described as "the most complete and logically coherent of all notation methods," while BMN is evaluated as "not appear[ing] to work as faultlessly as it should" and as insufficient for the documentation of complex movement. Morris's Danscript is praised for its potential for international application and being able to traverse language barriers as an abstract symbol system, but is criticised for having many symbols and being complicated to write (Coton 1968a: 252-253). The *Dancing Times* was once again accused of showing bias towards Labanotation (Green 1968). Commentators argued that, as a dance critic, Coton had no experience of BMN and could not make a suitable assessment nor comparison of

¹⁰⁵ Introducing the first article on BMN the editor writes, "Our publication in serial form of simple introductory articles on Labanotation has led some of our reader to accuse us of 'taking sides' in the present controversy over the Benesh and Laban systems. With great pleasure, therefore, we publish the following article" (Richardson in Hall 1956a: 515).

¹⁰⁶ Sometime between August 1966 and October 1967 the periodical dropped "The" from its title.

¹⁰⁷ The dance critic known as A.V. Coton was born Edward Haddakin and contributed to *The Daily Telegraph, Dancing Times, Dance News, Dancer and Dancers,* and *Ballet Here and Now* (Koegler 1982: 105).

notation systems. An impassioned debate ensued, prompting a further five articles to feature in the periodical (Coton 1968b, Green 1968, Hutchinson 1968a; 1968b; 1968c), some of which alleged bias on behalf of advocates versed in a single system and which triggered further articles focusing on the application of notation (Field and Hall 1968 and Whitley 1968). These articles were accompanied by letters to the editor arguing for the necessity of notation to be viewed as an academic field of study with the hope that this would create a dance literate audience, meaning that dance viewing would not be destructive to the advancement of the art form (Falk 1968: 408).

Danscript is absent from all but the first *Dancing Times* articles, eclipsed by the arguments from the Labanotation and BMN camps. This is not unsurprising. Labanotation had been freed from its attachment to its creator and, in essence, set forth into the world and allowed to develop according to proponents of the systems and the needs of its users. As previously mentioned, this was the purview of Jooss and Leeder in the UK, Knust in Germany, and Hutchinson in the USA. The recognition of their individual developments led to the unification of the system through the founding of ICKL, which continues to authorise amendments today. BMN had prestigious institutional backing from The Sadler's Wells Ballet, a relationship that continues today. Labanotation and BMN are both still in use, and their comprehensibility and applicability for all kinds of movement means that they are applied to fields beyond dance, including anthropology, movement science, clinical work, and movement therapies. Danscript, however, never enjoyed wider application, because none of Morris's students or dancers stayed with her long enough to learn the notation and integrate it into their practice. Morris had no one to build upon the legacy of Danscript, meaning that she was not at the forefront of the debates and was only alerted to developments in discourse by Hutchinson (Morris 1967-1968: 15 January).

A general desire to have a single "universal" notation system that could be used to document any kind of movement triggered the need for comparative studies. This can be seen in a response to the lecture demonstrations taking place at the British Notation Society in the mid-1950s, as written by Assistant Editor of *Dance and Dancers* Clive Barnes:

As has been proved time and time again, Labanotation most certainly works, and as Sadler's Wells apparently regard the Benesh system as even more efficient (because before taking their pick of the systems they surely investigated the whole question of notation minutely) it makes one extremely eager to see it in action. It will also be highly desirable when the Benesh system puts its text-book on general sale for study. If their system is as good as they and their advocates claim, it would seem to be obviously essential for everyone to switch from Labanotation to the new method. Why have two systems if one is clearly the superior? (1956: 31) The bias towards BMN here is unsurprising given that the dominant focus for *Dance and Dancers* at this time was classical ballet, and mostly featured reviews and analyses of productions and exposés on leading figures in ballet. In an article for the *Dancing Times*, BMN notator Frances Green sought to clear up Hutchinson's misconceptions about the capacity of BMN. Green proposes that Gordon Curl's *An Enquiry into Movement Notation* (1967), "maintains the highest standard of scientific objectivity and academic respectability" in its comparison of Labanotation and BMN (1968: 479). Curl's study claims to take an impartial view in assessing identical questionnaires about notation completed by Hutchinson and Benesh and additional materials by former Laban student Preston-Dunlop. Yet *An Enquiry into Movement Notation* featured only two systems, and Morris set about producing her own evaluation.

Aspiring toward universality, Morris stated that she would be prepared to adopt another notation system should it prove more accurate than Danscript for recording dance (Mason 1956b: 30 and Morris 2003: 154). Of this, Hutchinson wrote:

Miss Morris's attitude towards other systems of notation was much to be admired. She stated that she was willing to be convinced that the Laban system or any other was better than her own (her knowledge of other systems is slight) but that in her experience her system worked well and so she stood by it. (1956c: 36)

Morris's attitude is indeed commendable; however, Morris was not prepared to give up on the possibility of Danscript becoming a widely applied notation. This is unsurprising given that Danscript was a lifelong project. Morris felt that Danscript had something valuable to contribute, and Labanotation and BMN were not, in her opinion, perfect systems. As a compromise, Morris reportedly proposed amalgamating "the better ideas of any particular methods to form an even better and more useful single system" in a presentation for the British Dance Notation Society (Mason 1956b: 30).

Morris recognised the need to promote Danscript, and was inspired by, and responsive to, the debates in *The Dancing Times*. Her *Morning Books* evidence that she worked on her own article for the periodical, but little suggests that this was ever completed. To advocate for the efficacy of Danscript, Morris felt that she needed to understand Labanotation and BMN as competing systems. Morris claimed that the comparative evaluation of notation systems should not be the purview of any one inventor, but an independent panel of experts should be formed, comprised of a choreographer, doctor, mathematician, and a musician (2003: 153-154). These experts would contribute the wide variety of perspectives needed to suitably judge Danscript according to Morris's interests in health and wellbeing, movement therapy, and the relationship between dance and music. Nevertheless, Morris was impatient. Such an assessment would take time and a great deal of organisation, neither of which Morris had in excess. Instead, she undertook her own, far from rigorous, evaluation that led to the inevitable conclusion of the superiority of Danscript:

Did some work on notation. now <u>convinced mine is</u> better <u>than</u> Laban! — & I <u>think</u> better than Benesh!—[...] as feel now <u>I ought to push mine</u>. (Morris 1968: 3 March [emphasis in original])

Morris found Danscript to be comparable to Labanotation but easier to use, finding Labanotation to be "very slow—to write—& read!" and "a <u>clumsy</u>" method!" (Morris 1968: 10 May [emphasis in original]). Morris's study of Labanotation is evidenced in her personal annotated copy of *Labanotation* (Hutchinson 1954), and she discussed her findings with Anderson in March 1968 via written correspondence. In turn, Morris thought that BMN was easier to use than Danscript, but that the written information was too small and resulted in confusion (Morris 2003: 153). The evaluation of BMN took just a few days: Morris was sent a copy of the BMN publication by the editor of the *Dancing Times*, Mary Clark, on January 14th 1968 and confirms her view of the superiority of Danscript a few days later on January 17th and then again January 18th 1968.¹⁰⁸ This suggests that her mind was made up in advance of this study.

Contributing to the Collective Knowledge of Dance

The notator is usually a trained dancer; as Preston-Dunlop (1981: 17) suggests, "Previous dance experience is necessary to illuminate the seeing behind the knowing." Notators are experts trained to analyse and translate movement through prescribed standards and conventions, or analytic and conceptual frameworks. They usually show a preference or affinity for a particular system, which is unsurprising given that reaching fluency requires a great deal of commitment and a lot of time. Utilising a single system, Labanotator and dance scholar Sally Archbutt argues, means that notators are in danger of becoming "blinkered technicians" (1981: 33), presumably because of how notations characterise the perception and understanding of movement. However, given that a single system has not been established as suitable for all dance methodologies, there seems to be a need for accommodating different conceptualisations of movement. Specialising in one system does not appear to be problematic providing that the particular conceptual framework is understood and that it is recognised that notation can only ever create a partial record of dance.

Labanotator Maria Szentpal suggests that notation "goes from perception through the eye immediately to the mind where the perceived movements should be registered into the respective

¹⁰⁸ Morris refers to the study and annotation of the BMN book in her *Morning Book* entry dated January 15th 1968, but I was unable to find this resource amongst the archive.

categories of the movement analysis system" (1984: 10). This perspective appears to position notation as a purely cognitive act but overlooks the rich resource of the notator's embodied knowledge that arises from experience. The dancer's experience and their physical processing of movement creates a framework that shapes how they see and understand movement and thus how it is analysed and translated. Despite the intention to "act [...] as a kind of impartial observer" and work only within the prescribed objective framework, should the dancer "not be allowed to involve [...their] own body" in perceiving the work, as Szentpal (1984: 10) proposes, then a wealth of experience is overlooked. I argue that in Labanotation, understanding emerges not only through observation but also through a physical processing of information and access to physical memory and embodied knowledge. My own experience reveals a preference for taking one's body as the reference point when working with the three-dimensionality of movement, and it is often necessary to place oneself inside the material for the deconstruction and translation of dance onto the page. For some notation scholars (Szentpal 1984: 10) however, this would be detrimental to the intended objectivity of notation as an analytic method.

Brian Rotman writes,

Alphabetic writing, like all technological systems and apparatuses, operates according to what might be called a corporeal axiomatic: it engages directly and inescapably with the bodies of its users. It makes demands and has corporeal effects. (2008: 15)

In characterising notation as a technological system similar to writing, it becomes possible to theorise how combinatorial symbol-based systems transforms those who use them. Rotman suggests that writing imposes its

own methodological needs on the body, from the evident perceptual and cognitive skills required to read and write to the invisible, neurological transformation which it induces in order to function

and thereby produces an "alphabetic body" (2008: 15). The same can be said for the users of notation systems. The notator develops a particular way of seeing and understanding dance through the interplay of knowledge gained through prior experience (retention), which shapes what they attend to and what they expect to see in movement (protention). Both practical and theoretical experience are at play here, which includes how notational frameworks, as the closest thing to an alphabet for movement, becomes incorporated into the notator's way of seeing and understanding movement. The alphabetic or "notational body" is further shaped by the notator's interaction with notation scores (tertiary retentions). Given that different notational systems embody particular movement ideologies and conceptualisations, it becomes useful to contemplate how their use results in different understandings of movement. These understandings are not only important for the individual but

have significant implications for other readers and for future generations with respect to what kinds of thinking and knowledge about dance are retrievable. Codified systems of movement notation legitimise certain kinds of knowledge and stabilise what is known.

A general understanding or belief that there should be a single system of movement notation adopted by the dance community was a contributing factor to the heated debates about Labanotation and Benesh in 1955/1956 and 1968. Labanotation, BMN, and Danscript were invented to document dance according to particular movement ideologies and conceptualisations. With hindsight, it is possible to see that the recognition that different notation systems cater for different movement methodologies is absent from these debates. This is important for contemplating how belief systems contribute to collective knowledge and the challenge of a one-size-fits-all approach to documentation. It seems that a single system could not transpire because there was not one way of thinking about dance.

Notation is a process of grammatisation that fixes aspects of dance on a page to create non-biological memories of dance. This necessitates a change in the spatial and temporal condition of dance, splicing movement into units of analysis to engender a quality of fragmentation. In notation, movement is necessarily recorded as a series of discrete positions. The resulting record, the notation score, provides access to a past that may not have been lived or experienced by the score's reader. These tertiary memories are characterised by selection and choice: the notation system embodies a particular viewpoint on dance and, furthermore, the notator chooses how to look at and translate movement according the prescribed analytic and conceptual frameworks assigned to a given system. Notwithstanding this, selection and choice imply omission and loss. Even complete and trusted notation systems and those that have enjoyed relatively widespread application create only partial memories of dance.

Notation systems are not mere utensils in the documentation of dance, nor a means to an end, but are part of a larger history of technologies that create a corpus of movement knowledge that shapes what is and can be known about dance.

Conclusion

This chapter has offered an account of dance and movement notation systems as social mnemotechnical systems that evolve in response to the needs of the academy and/or the dance community and the technological affordances of already existing analytic methods. A link between Beauchamp-Feuillet notation and Labanotation, and between Duncan's shorthand and Morris's

notational endeavours, helps to trace a history of inventions and re-inventions. This depicts a heritage, lineage, or ecology of notation whereby ideas about dance and documentation are invented, developed, and recycled in dialogue with already existing methods and evolving in response to the demands of the dance community. In other words, a collective individuation of dance and movement knowledge has accumulated over time. This provides a useful context for positioning the emergence of video annotation as contextual, relative to a rich heritage of dance and movement notation, that might help unveil how collective knowledge continues to accumulate through mnemotechnics.

In documenting dance, tensions manifest between what can be recorded and what is desired. It was seen that in the Renaissance era the legitimisation of dance was controlled by the academy, and only authorised ballet masters could disseminate their dances. The Beauchamp-Feuillet system set the standards for dance steps, and the notation fell into disuse when fashions evolved. However, the contributions that this system made to dance knowledge persist today in the reconstruction of historical dances using the notation, in ballet vocabulary, and the development of Labanotation. The invention and development of Labanotation, BMN, and Danscript were driven by choreographers and dancers in need of a method to raise the status of dance, facilitate analysis, and preserve dances. This drove the developers of each system to refine their offerings and to articulate the possibilities of their notations. For Laban and Morris, this was despite an awareness that the notation recorded movements as positions passed through and not trace forms (for Laban) and its inferiority to film (for Morris). The scrutiny that Labanotation and BMN found themselves under ensured that these systems were concretised, workable, and suitable for the needs of their users at a given time. This happened to a lesser extent for Morris, who was responsive to developments in the discourse about notation and invested in Danscript; yet her system was never widely applied or tested. Nevertheless, it seems that the tension between dance ideas and how they might be recorded lead to a search for suitable alternative approaches to suit the documentary needs of artists. Through testing and pushing the boundaries of already existing systems, new and (perhaps) more suitable approaches to documentation emerge, allowing the progression of ideas about how to transmit and share the knowledge and outcomes of dance. Subsequently, developments in the heritage of dance and movement notation are not always immediately recognisable but can take a long time to emerge, primarily because time and effort is required to establish methods and then for a community of users to adopt, test, and challenge their capacity and capabilities. Dance practices move faster than the technological advancements that document them.

Labanotation, BMN, and Danscript are comprehensive systems yet result in only partial records of dance. This is because the analytic and conceptual frameworks for each specify inclusion and exclusion criteria that determine what details of the dance are selected for translation and documentation to the omission of others. This is not necessarily a conscious decision of the notator; they must work within the framework of their preferred system to ensure that resulting scores can be read by anyone with the requisite skills to do so. Laban, BMN, and Danscript are useful tools for the analysis and transmission of dance. They are able to record the actions of the body in time and space, however, they articulate little of the experience of movement, though impart something of the notator's perception in viewing. As the requirements of each notation system are different, a diversity in a collective understanding of dance becomes possible. While the vision of a single "universal" approach was championed, it is in fact preferable to have competing systems because different conceptualisations of movement can be catered for.

In contrast to the fluency of the Renaissance elite, today relatively few dancers, choreographers, and the general public alike have the skills for reading or writing dance notation. In the twentieth century, advocates of notation aspired towards a single system, to find one method that could reign above all others. No single method transpired, although Labanotation and BMN are the most commonly used twentieth century systems. While many thought that notation would serve dance just as it has music, codified and sharable systems of movement notation did not become as ubiquitous as many advocates may have hoped them to be. Nevertheless, the legitimisation of different perspectives and conceptualisations of dance through competing systems is important.

Over time, the heritage of notational technologies advances to accommodate developments in choreographic practice. The vocabulary of notation systems was enlarged, drawings appended, and new systems invented. As notation systems became more sophisticated, so did the skills required for their use. Today, the degree of information contained in the score means that movement notation is often perceived as being difficult to learn, read, and write, a perception that extends to many dance practitioners who also believe that dance thinking and knowledge exceeds what can be captured through notation practices. Subsequently, it feels almost inconceivable that dance artists working today would invest in developing a method of codified notation in the traditional sense to create a translation of movement: methods are needed for the analysis and transmission of practice, ideas, and experience.

Some contemporary choreographers and researchers identify that already existing forms of notation cannot capture the knowledge arising from contemporary movement practices (Bleeker 2010: 3, Dixon 2007: 631, Forsythe in OpenEndedGroup 1999, and Preston-Dunlop 1992: 21). The traditional codified notations systems discussed in this chapter are prescriptive in how they are used. They are almost always used with the aim of capturing what the choreographer asks for and with the intention of creating a translation of a complete choreographic work as opposed to recognising the contributions and perspectives of the dancer(s) and the creative process. Any emphasis on, or attention to, the deeply intuitive, embodied, and phenomenological experience of movement recedes into the background in favour of documenting the mechanics of dance and the actions performed. This is one limitation of traditional notational technologies that makes it difficult to record the knowledge of movement sensation and embodiment often foregrounded in contemporary movement practices. This is not to say that what the choreographer asks for is not the same as what materialises in the dancer's movement, but traditional notational practices do not allow the reader to understand or recognise to what extent this is the case. I propose that researchers of documentary techniques are now concerned with not only what movement is performed, which many notation systems capture well, but also how to capture the intention and thinking behind movement ideas from different perspectives. Nevertheless, it is important to recognise that these systems of dance and movement notation are not wrong but are perhaps unsuitable for the research questions and conceptualisations of dance at a particular time. As the dance milieu shifts, so too do its analytic needs, and thus the technological systems of representation must shift also.

This chapter has positioned dance and movement notation systems as social and mnemotechnical tools that allow for particular (and partial) understandings of dance to emerge. This contextualisation makes it possible to understand how different systems condition an inevitable and unavoidable bias in what is seen, analysed, interpreted, and understood. Through the analytic and conceptual frameworks of codified movement notations, the impossibility of neutrality when looking at dance is highlighted. Nevertheless, it is important to acknowledge that all readings of dance are necessarily biased and that everyone will read dance differently, determined by a range of factors including cultural background and, where applicable, the research field in which they are situated. Making tangible records of dance available for study and circulation, even the partial accounts that are possible using notation, provides the conditions for collective knowledge. The prescribed frameworks for different kinds of knowledge of dance emerge through different systems. This, I propose, however, is not problematic but enables different understandings of dance to co-exist.

The discussion of notation in this chapter provides a foundation from which the relatively recent appearance of video annotation in dance might be contemplated and how it might be positioned as part of this trajectory. But before the examination of video annotation in Chapter Six, I look to another kind of documentary practice, the ubiquitous physical sources that are artists' notebooks, which operate as intuitive tools to support the artistic process. Importantly, the examination of choreographic notebooks allows me to contemplate their use and value as a mnemotechnical tool that is used differently and functions differently to dance and movement notation. I focus my attention on the archived notebook collection belonging to Morris to enable an in-depth examination of notebook function for developing thinking and ideas relating to a particular movement practice. The focus on Morris in the next chapter helps to foreground the contributions of this little-known British movement pioneer.

CHAPTER FIVE: CHOREOGRAPHIC NOTEBOOKS

Choreographic notebooks are commonly understood to be valuable tools for artistic practice as they provide a site for recording ideas, thoughts, and observations: their markings are not those of a writer. This chapter proposes that notebooks are more than documentary tools; they also support thinking and creativity. To do this, I return to the history of a particular movement practice to explore a collection of notebooks belonging to Margaret Morris. The analysis of these primary sources, which Morris refers to as *Morning Books*, reveals that she was conscious of their mnemotechnical value. Building upon details given in the previous chapter, I begin by providing biographical information about Morris and her professional ambitions in dance. Then, following a description of the *Morning Books*, I examine how embedded mark-up techniques, i.e. annotations that are created in the moment of writing, can expose the dynamics of thinking. I show that grammatisation processes result in incomplete thoughts that become vehicles for individuation. This is followed by contemplating both the status of notebook markings and to what extent they might be described as notes, notations, or annotations. The chapter creates a bridge in this study between the formal and codified movement notation systems discussed in Chapter Four and the examination of video annotation in Chapter Six.

Margaret Morris's Morning Books

The fifty-two A5 notebooks that span seventeen years of Morris's career, from 1952–1969, appear to be the only continuous collection to survive the turbulent history of her archive collection (see pp. 89-90). Morris was a remarkable and ambitious individual who felt the significance of her practice and life's work. During this time, she advanced in all areas of her professional practice: The Celtic Ballet had their USA premiere at Jacob's Pillow and later became known as the Scottish National Ballet, the MMM technique was developed, Danscript was refined, Morris continued her work as a dance movement therapist, and she drafted ideas for an array of publications. The *Morning Books* weave a labyrinth of activities and competing interests which are rooted in a lifelong resistance to classical ballet, an interest in dance notation, and advocacy for health and wellbeing. Yet the notebooks also suggest that Morris was frustrated by the limited professional success and recognition she achieved during her lifetime.

In a rather disparaging letter to Morris following the appearance of the Celtic Ballet at Jacob's Pillow, Ted Shawn writes: By shock, I mean that knowing of your long life and career in <u>theatre</u>, and seeing the richness of movement vocabulary you have dreated [sic] and developed in the Margaret Morris Movement, I could not believe that you could have countenanced anything so amateurish both in conception and in execution, as this. And another thing which I simply cannot understand is that having developed such a rich, satisfying technique of body movement in your M.M.M.—when you come to choreograph a "ballet" you seem to throw all that out of the window, and go back to a movement vocabulary of 1900! The pantomime is so "corny" and so artificial-realistic, if you get what I mean. (1954b [emphasis in original])

Nevertheless, Shawn describes Morris as an innovator stating that:

I think that you, yourself, are somewhat like Ruth St. Denis—an <u>inspirer</u>, a provider of basic principles, one who widens horizons, and gives higher and broader vision; but you are not a teacher, nor director in the professional sense of the word. I was amazed and appalled by your unprofessional behaviour at times. (1954b [emphasis in original])

Shawn highlighted Morris's lack of professionalism in a previous letter that comments on her disorganisation and unresponsiveness leading up to the Jacob's Pillow Festival (1954c). However, this does not appear to be through lack of motivation nor work ethic. Character and temperament aside, Morris's lack of focus, evidenced in the variety of activities referred to and developed in her *Morning Books,* arose because of her investment in different ideas and areas of practice that competed for her time. The contents of Morris's *Morning Books* reveal her to be a deep and reflective thinker and a meticulous planner, if not overly ambitious.

Choreographers' notebooks are often thought of as studio-based tools, but there is little evidence to suggest that Morris used her *Morning Books* when working with students or company dancers. The notebooks serve a multitude of functions and are used to develop ideas relating to all her professional activities. Morris's notebook use was habitual. She wrote in them religiously, almost daily, an established routine that offered an impetus to think about and reflect upon her professional practice and her life which, for Morris, like many artists, appear to be one and the same.

Morris's writing practice shifts between planning and drafting ideas for her artistic work (choreographies, costume, stage design, company logo designs), documentation (Danscript and publications about her work), collating inspirational texts, and a personal diary recording notable encounters and events. Entries consist of writing, drawing, shorthand notation, and stick figure notation. Inside the *Morning Books*, many of the entries are given titles to organise and give focus to their contents. The three most frequent are *History*, *Ideas*, and *Thoughts*. In 1965, Morris started to use abbreviations for these titles, *HIS*, *IDE*, and *THO*, but this shorthand was short lived. *History*

contains thoughts and reflections on events and activities in the form of a diary. They include personal insights into the dance scene, such as her aesthetic preference for the ballets performed by Ballet Rambert (Morris 1976: 15 December) and her dislike of Merce Cunningham's (1919–2009):

Merce Cunningham—<u>modern ballet!?</u> <u>Classical</u> but <u>bare feet</u> (legholes [?] cut off). Wonderfully trained— & <u>rehearsed</u>. <u>If you want</u> that kind of thing [...] dead faces [...] no music! (Morris 1966: 1 December [emphasis in original])

In *Ideas*, Morris considered developments for MMM, Danstherapy (her method of dance movement therapy), and Danscript. Under *Thoughts*, Morris made note of inspirational, motivational, and philosophical statements for success and questions her place in the world.

Morris wrote her name, address, and the date range of entries on the front cover of each *Morning Book* (Figures 10 and 11, pg. 130).¹⁰⁹ The value of these notebooks for Morris is explicit, indicated by phrases inscribed on the front cover such as "REWARD!" or "KINDLY RETURN!". The uncharacteristically blank pages in the May 24th 1968–March 1st 1969 *Morning Book* gives the impression that it was the last of Morris's career. Atypically, it spans almost an entire year and functions predominately as a diary, noting moments of each day in just a few lines. After this, Morris appears to have directed her attention towards preserving her legacy and that of her husband. She authored several books including *My Galsworthy Story* (Morris 1967), the autobiography *My Life in Movement* (Morris 1969), *Creation in Dance and Life* (Morris 1972), and *The Art of J.D. Fergusson* (Morris 1974), to add to her existing publications.¹¹⁰ The *Morning Book* dated January 5th–February 26th 1965 has added significance, because it was the last notebook she used while her husband was alive.

Morris was an economic writer and made use of every available space in the notebook. She rarely wrote on the inside front cover, although the inside back cover functions as an overspill space for unfinished entries. Evidence of torn out pages indicates that the *Morning Books* sometimes serve as a source of scrap paper, while loose notes and newspaper clippings are inserted with adhesive, indicating the necessity of storing ideas in a single space.

¹⁰⁹ There is just one notebook in the collection where this is not the case, because its glossy deep-purple cover would mean that any written inscription would not easily stand out. Instead, the top right corner of the front cover has been neatly cut out to reveal the page underneath upon which the date is written.

¹¹⁰ These are *Breathing Exercises* (Morris 1935), *Maternity and Post-Operative Exercises* (Morris 1936), and *Basic Physical Training* (Morris 1937).



permission of Margaret Morris Movement International. Figure 10 and Figure 11: Images of Morris's Morning Books dated March 27th 1954–January 14th 1958 and March 5th–May 11th 1958. Images reproduced with kind

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Figure 12 (top left): An entry from Morris' *Morning Books* that shows ink-filled doodles in close proximity to the phrase "symbol of sacrifice." Figure 13 (top right): A *Morning Book* entry dated December 27th 1960 that features blue ink-filled doodles that Morris interprets to be bird-like figures as evident in the accompanying written notes, "very clear bird!?" and "beak sharp!" Figure 14 (bottom): "Tea leaves!!!" Images reproduced with kind permission of Margaret Morris Movement International.

The importance of examining the *Morning Books* as a collection and not as isolated notebooks became apparent following the discovery of blue ink-filled doodles on my first visit to the archive. These doodles were positioned either side of the words "<u>symbol</u> of '<u>sacrifice</u>'" (Morris 1960-1961: 5 August [emphasis in original]) (Figure 12), which led me to contemplate whether these (and subsequent) markings symbolised a notation for spiritual concepts. This was not unfounded, as Morris was spiritual, and perhaps superstitious, by nature.¹¹¹ For example, Morris noted the appearance of a new moon, a black cat, and the birds she saw in the dawn sky that she took as a good omen in her *Morning Books*. However, Morris aspired towards developing a notation system for movement and these doodles are unlike any symbols encountered in my study of Western dance notation. In sharing these doodles with native-speakers of Japanese, Chinese, and Korean I was able to rule out that the symbols may be from East Asian languages given that it is not possible to detect any recognisable brushstrokes. Later that same visit, I came across similar doodles, this time accompanied by the description "very clear bird!? beak sharp!" (Figure 13). The use of punctuation suggests that the meaning of these doodles is not

¹¹¹ Art historian Richard Emerson notes that Morris was a member of the Theosophical Society whose 'World Teacher', the Indian philosopher Jiddu Krishnamurti (1895–1986), joined the Margaret Morris Club in winter 1919 (2018: 46-47).

fixed and indicates interpretative activity. Another doodle in the entry for September 25th 1961 is accompanied by the phrase "looks like it must mean something?!". It was not until the end of my second archive visit ten months later, when the words "tea leaves!!!" were encountered in close proximity to a doodle (Morris 1958a: 17 October) (Figure 14, p. 131), that it became clear that these doodles were not the beginning of a new kind of notation but suggests that Morris was practicing divination by tea leaves. An entry from December 7th 1959 provides further confirmation: the phrase "In teacup 6th Dec. 7 + 5 important" accompanies a drawing that indeed resembles the figure seven. Nevertheless, I have found no evidence amongst Morris's autobiography or other publications (only in her *Morning Books*) that sheds further light on this practice. My discovery of the *Morning Books* arose in my search for more information about Danscript, and, therefore, early readings of their contents were influenced by this particular interpretative lens. The mystery of the doodles was resolved through the study of the collection in its entirety.

Reading tea leaves was a common practice in the early twentieth century. Cecily Kent, author of *Fortune Telling by Tea Leaves: How to Read your Fate in a Tea Cup,* suggests, "The desire for knowledge on all Psychic matters has led to an increase and demand for various methods of bringing into symbols and pictures that hidden knowledge of the present and future" (1921: 9 [capitalisation in original]). Starting from the present day as viewed as at the handle of the rim of the cup and moving into the future through a downwards spiral into the cup, the practice was thought to bring forth knowledge of a higher order through the interpretation of the shape that loose tea leaves clump into. Kent argues that, "there is much evidence of the 'tea-leaves' [as signs] being capable of foreseeing events of an important nature at a considerable distance ahead" (1921: 11).

If Morris was indeed practicing divination by tea leaves this practice appears to have started in 1959 when tea leaf representations first appear in her *Morning Books*. The number and regularity of tea leaf drawings along with musings of their interpretation indicate that she placed great importance on these readings. 1959 was an important year in Morris's career, as she was approaching the Golden Jubilee of MMM and was making plans to launch the Scottish National Ballet. One might hypothesise that Morris sought guidance and a glimpse into the future to calm any anxiety and doubt.

The Dynamics of Thinking

There is a stylistic consistency in Morris's notebook entries, although she does not write in a uniform way. The style, spatial density, and clarity of writing relate to the function it serves, and legibility changes according to whether Morris is writing content that relates to *History, Ideas*, or *Thoughts*.

Thoughts, for example, are often the most legible and appear to result from a contemplative process that gives time for thinking to unfold. *Ideas* give the impression of thinking in the moment, recording spontaneous ideas. These notebook entries embody a sense of urgency and are forward-thinking in their advancement of ideas for professional practice. Entries titled *History* are concerned with looking backwards to the immediate past. They serve to record activities and events and have a mnemotechnical function.

Morris has a wonderfully consistent use of markup techniques that expose the dynamics of her thinking. The *Morning Book* entry dated October 30th 1960 (Figure 15) uses underlining and vertical lines in a way that divides her writing into sections that differentiates between thought processes. While each section of the entry is connected, the use of mark-up techniques demonstrates different emphasis. The entry begins:

> If you really have "faith" you <u>know</u>—(& act on belief) that the <u>material things</u> are the <u>easiest to control</u> [emphasis in original]

reproduced with kind permission of Margaret Morris Movement つし International Figure 15: Mark-up activity exposing the dynamics of Morris' thinking. Image Ħ 301 0 ous DOO

This indicates Morris's belief that personal and

professional success might be granted by controlling material things, in this instance ensuring sufficient salary or wages for her employees. The next section reads:

<u>Pay your</u> people well (!!!) (the <u>means</u> will come to your hand!) The right people will come forwards to help you! [emphasis in original]

The double underlining in this section, accompanied by vertical lines to the left of the text (see Figure 15), suggests a stronger force of thought than for the single underlining in the first section. The additional emphasis identifies an idea that can be actioned (paying her staff well). The third, more note-like, section reads:

<u>George</u>—to strengthen 'faith'! <u>Robin</u>—General usefulness—managing <u>people</u>? Timetable & Danscript! <u>Pauline</u>—Veg. side Canteen? [emphasis in original]

The underlining here for *George, Robin, people,* and *Pauline* indicates more immediate and specific actions.

Jackson (2005a: 252) proposes that the use of underlining as a mark-up technique, when created by book readers, might be described as "signs of attention" and identifies details of the source that the reader deems "better than others and that can be enjoyed in isolation". In the example above, Morris is not yet the reader but is the author in the moment of the mark-up activity. I propose that the mark-up activities described in Figure 15 are annotations embedded in the grammatisation of thinking, created at the same time that the ideas are externalised, or inscribed on the page.¹¹² The annotations, which might also be viewed as forms of emphasis or augmentation, are created through a different process to those created by the reader of a text. In other words, while a reader may underline passages of text to follow complex arguments (see p. 43) or to make selection of text for future reference, the writer may underline what they are writing to add emphasis. This is the equivalent of using italics when typing to emphasise certain words. Such annotations do not necessarily extend thinking in the way that a reader's annotation might but help to articulate the dynamics of thinking. Subsequently, there are different functions for a mode of annotation, determined by who is using them and their intention. This viewpoint draws attention to the bifurcate practice of annotation (see p.46), meaning that annotations are not only created by the reader but the creator of the source also.

There are instances in the *Morning Books* where Morris not only records ideas but responds to existing content, thereby adopting the role of the reader. This can be seen in the interpretative activity in Figures 16 and 17 (p. 135), for example. In Figure 16, Morris has created a drawn representation of her tealeaves, which creates a fixed record that provides the opportunity for repeated study, and the possibility to create something of a portfolio of readings over time. Morris's drawing becomes the object of study which is interpreted to make sense of their meaning. These interpretations are captured as written notes that sit alongside the tealeaf drawings and are examples of annotation in the traditional sense because they help to extend an understanding of the information source, in this case the drawn tealeaves. Nevertheless, the lack of perceivable distance between the time of creating the drawn record and the time of interpretative annotation poses a challenge for this

¹¹² Another form of embedded annotation that may help to articulate the dynamics of thinking is the use of upper case letters which could indicate the urgency or importance of an idea.

conceptualisation. Morris is both the author of the drawings and of the interpretative annotations, which take the form of notes, exclamation marks, and question marks, the latter indicating that her thoughts are not final conclusions. Figure 17 shows Morris as a reader responding to an already existing source, a newspaper cutting of her horoscope which has been affixed to the back page of a *Morning Book*. In this example, the multiple exclamation marks drive home the importance of the horoscope's advice about not being alarmed by a sudden rush of work. In this instance, the spatial relationship between the original source (the horoscope) and the annotation make her feelings explicit and leaves little doubt that Morris was alarmed by her workload.





Figure 16 (left) and **Figure 17 (right):** Interpretative annotations. Images reproduced with kind permission of Margaret Morris Movement International.

Private Documents and Unfinished Thoughts

Louppe asserts that, either through lack of interest from the general public or a destiny to remain invisible, sketchbooks markings "will follow the general fate of dance notations, which is to escape almost always from the public eye" (1994: 16). The "almost always" observation is important for recognising that there are instances when artists' notebooks cross effortlessly into the public sphere, when forming part of an exhibition or archival collection for example. This is the case for Morris's *Morning Books* which became public when they were donated to the Perth Gallery, yet the dead spider that fell from between two *Morning Books* suggests that few have explored these items in recent years.

Louppe observes that,

the drawings and notations of choreographers are little known. They result from a more or less private practice, limited to a small professional community, or sometimes even from the secret, intimate pursuits of their authors. (1994: 7)

Notation here does not refer to traditional codified systems such as those discussed in Chapter Four but to the markings that signify individual practice. This may well include the use of codified and sharable forms, as can be seen in Morris's use of Danscript and Duncan's shorthand (discussed in the previous chapter), but these are not usually employed with the intention of documenting movement sequences or dances in full, rather they contribute to personal and idiosyncratic systems of documentation. Artists have a long-term and ongoing relationship with their practice, and their movement conceptualisation develops and becomes fine-tuned over many years. So, it is not unsurprising that artists seek to develop approaches more in keeping with their artistic vision and particulars of their practice. Despite their ubiquity, the contents of choreographers' notebooks are rarely published and usually remain known only to their owner(s), which indicates that they serve a predominately private function.

The distinction between the private and public sphere implies that choreographic notebooks have potentially, at least, two different lifecycles. They serve a process-oriented function for their user and provide ongoing support in the reflection and development of ideas, helping to resolve something in the moment of inscription. Notebooks are mnemotechnical supports that are intended to serve the progression of artistic practice. The second lifecycle for the notebook comes at a later date when they become shared artefacts, becoming interactive as objects through a dialogue between the dance artist, the contents of the notebooks, and the reader. This dialogue might arise from the dance artist's intention to share, amongst collaborators for instance, or from the notebook's participation as a part of an archival collection.

Cognitive scientist Andy Clark identifies the crucial role that notebooks serve for the artist:

The sketch pad is not just a convenience for the artist, nor simply a kind of external memory or durable medium for the storage of fully formed ideas. Instead, the iterative process of externalising and re-perceiving turns out to be integral to the process of artistic cognition itself. (2003: 77)

This is an important observation for examining the role that notebooks have for supporting thinking and creative processes. The ideas documented in notebooks are in-formation, and the notion of "externalising and re-perceiving" suggests an iterative process in which notebooks are collaborators. Clark describes this process in more detail:

We begin, perhaps, by looking over some old notes, then turned to some original sources. As we read, our brain generated a few fragmentary, on-the-spot responses, which were duly stored as marks on the page or in the margins. This cycle then repeats, pausing to loop back to the original plans and sketches, amending them in the same fragmentary, on-the-spot fashion. (2003: 75)

This account is evident in Morris's *Morning Books* which can be seen as working documents that support the development and refinement of ideas. They reveal a practice in flux, developing over time. Additions, revisions, and amendments made to entries can be identified by dated revisions or the use of different colour, shade, or type of ink. In these amendments, different markings serve different editorial functions. The strikethrough annotation through the entire page in Figure 18, for example, serve as a confirmation of value, and indicate that the information has served its purpose and is no longer needed. The use of the word 'IN' indicates that these entries have made their way into another source, in this case, a draft publication about dance and design therapy. When created by the annotating author, such annotations reveal editorial and compositional processes. In contrast, wavy or squiggly lines through entire sections of notebook entries implies disagreement with, or disapproval of, earlier ideas. Such annotations when created by readers, Jackson suggests, "show the work to be flawed and subject to decay, not perfect or timeless" (2005a: 252).

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Figure 18: Morris' notebook entry dated October 22nd 1955a that shows the revision of notebook writing. Image reproduced with kind permission of Margaret Morris Movement International.

Documenting thoughts, ideas, and events on the page creates an artificial memory that supports the biological memory of the notebook user, existing as a form of tertiary retention. Thoughts that were once new become past thoughts through their grammatisation on the page. This means that it is possible to engage with earlier ideas and feed back into the creative process to support and extend thinking. The iterative and recursive dialogical engagement suggests that notebooks have a life beyond their materiality. The understanding that notebooks are collaborators in thinking implies that

they support the externalisation of information not already realised by, or internalised in, their users. This is a crucial observation in recognising the value of these ubiquitous tools. The notebooks page is an invitation to search, probe, question, and respond to ideas.

Theatre scholars Timmy De Laet, Edith Cassiers, and Luk Van den Dries suggest that, "instead of being an instantaneous snapshot [... the iterative process] is in fact a continuous work-in-progress to which thoughts, ideas, and refinements are added, charting how a given work comes into play" (2015: 46). I propose that notebook entries are in fact both a snapshot in time and evidence of work-in-progress. Grammatisation means that thoughts and ideas are orphaned from the original space, time, and context of their emergence and become fixed on the notebook page. Nevertheless, notebook markings signify a fleeting moment, and their value may only be temporary. This is because, for an artist, the creative process will usually intervene. What can be understood about Morris depends on the function of the notebook entry: History offers shorts factual accounts of events and activities through Morris's eyes, *Thoughts* records a moment in time or a point of inspiration, while *Ideas* offers thinking on the page. Only as much as is necessary is documented for the task at hand. Despite being characterised as temporary or fleeting, notebooks entries help to concretise thinking, and have the potential to feed into long-term practice. This indicates that the individual's thinking can only be partially known, fully contained neither in the individual or the notebook markings. Subsequently, it becomes important to recognise the contents of notebooks as incomplete writings and that there are limitations in how much can be known about the living and ongoing affairs of their owner. This, following Goss (2015), suggests an ethical dimension to reproducing notebook entries or extracts without permission of their author. In other words, how can an individual's personal musings, thoughts, and ideas captured and fixed on the notebook pages be reproduced with care and with sufficient contextualisation to ensure that they are recognised as thinking fixed at a particular moment in time?

Notebook markings can be immediate and spontaneous, used to resolve something in the moment with little attention to form and legibility. This informality is predominantly seen in Morris's writings in *Ideas*, which give the impression of the need to capture ideas immediately. Nevertheless, Morris also uses representational systems, such as notation shorthand and taxonomical labels, drawing from the prior experience. Subsequently, there is an interplay between this prior experience (retentions that have become tertiary through mnemotechnics) and the ongoing use of notebooks to externalise ideas.

The process of grammatisation creates a fine-tuned and integrated relationship between the individual and the notebook as an external support. This creates, what Clark refers to as, a "mind-body-scaffolding" where,

human thought and reason is [sic] born out of looping interactions between material brains, material bodies, and cultural and technological environments. We create these supportive environments, but they create us too. (2003: 11)

It is, in effect, a process of technical individuation. Notebook use helps to advance the activity of thinking, but thinking and writing evolve together; they are co-constituted. Morris's habitual writing supports the individuation of thinking, and, with this in mind, it becomes possible to see how Morris's *Morning Books* are more than tools for documentation. They are essential methodological tools for the advancement of her dance practice.

Thoughts at a Distance

The support that Morris finds in her Morning Books leads her to place trust in them. She writes,

It comes to me strongly today—that my books may be the most important thing for everything—& may provide the means to achieve on this plane—the means to provide the material things necessary to save time and energy—& achieve more—more easily. The books will write themselves if you just let them! (Morris 1955-1956: 9 October)

From this *Morning Book* entry, the explicit value of these notebooks for Morris is clear as is the belief that her writing practice would lead to spiritual, artistic, and professional success. Furthermore, it seems that Morris trusts writing more when it arises from an automatic and free-flow activity, than when it requires work and intentional thought.

Morris's awareness of writing as an intentional and deliberate strategy for the development of ideas without stress and conscious thought is, in part, what makes her *Morning Books* such interesting sources to study. She writes:

—"write it down"
everything
That comes to you!!
all your theories and exercises!
(Morris 1957: 29 January)

And:

<u>Write down</u> everything as it comes, Even trivial things to be done. Do not tax your conscious memory with details <u>write them down</u> free yourself to receive what is important prepare then follow the impulse that comes if you get it right—it <u>must succeed.</u> (Morris 1958b: 11 March [emphasis in original])

According to Morris, automatic writing is characterised by a particular bodily state of relaxation and openness:

On writing! For inspiration to flow through you Easily in writing— You must learn to be really relaxed! Back, neck, arm! no tension anywhere then you will write with ease & with pleasure! (1956: 25 August)

Ensuring that one is attentive to the writing process and not distracted by superfluous activity is, Morris believes, the most constructive state for effortless and efficient writing.

The Indian philosopher Jiddu Krishnamurti (1895–1986), the World Leader of the Theosophical Society that Morris was a member of, appears to have contributed to Morris's understanding that psychological and physical ease would inspire creativity and success. Passages of Krishnamurti's writing have been copied out in note form into the *Morning Books*, listed under the heading thoughts. For example:

... It is only when the mind is free from anxiety, free from fear, free from loneliness, that it can then understand that which is not measurable by the mind;

.... When the mind has completely put aside all escapes, & is not trying to find an answer. Because whatever movement the mind makes in trying to understand, the central issue must be based <u>on time</u>, on the <u>past.</u> And time comes into being only when there is fear and desire.

(Krishnamurti cited in Morris 1952: 15 November [emphasis and punctuation in original])

... understanding the ways of our own thinking;

.... The challenges of the mind, from which all mischief arises. Having understood them they will naturally come to an end; and through the mind, being free from its own pettiness, can penetrate without effort, without that constant battle, & discover what is beyond itself.

(Krishnamurti cited in Morris 1952: 19 November [emphasis in original])

Such entries characterise the belief in an intuitive approach to writing where thinking and understanding are not realised in the individual but through the technological support of notebooks.

Morris's notebooks are personal tools: they are not, in the first instance, directed towards an audience. Subsequently, Morris's choice of language is worthy of consideration. Some entries give the impression of an authoritative and orderly performance, a written speech, and one that intends to remind and convince the present-day and future Morris of the importance of her habitual writing practice for inspiration, problem-solving, and the realisation of success. It is as though Morris is directing her advice that is written on the page back towards herself. An example of this can be seen in the *Morning Book* entry dated September 14 1956, where Morris writes:

<u>I will</u> enjoy watching the problems be solved <u>through me</u>! <u>I will</u> enjoy watching myself write! when I rest & relax— & let the words <u>come through me.</u> [emphasis in original]

This excerpt alludes to a distanced perspective in the moment of writing, an automatic process where she is in control of her psychological and physical approach but not the content that arises. It appears to be about a conscious and consistent approach to writing practice but not of conscious thought.¹¹³

In understanding that Morris's *Morning Books* facilitate an inner recursive dialogue, a comparison may be made to philosopher Brian Rotman's concept of "speech at a distance," (2008: 25) which considers what happens to speech when it is written. Rotman suggests that the voice becomes severed from spoken words once it is laid to rest on the page, and this results in an invisible author who is detached from the words that they utter. The original spatial, temporal, physical, and aural condition of speech is transformed, becoming a virtual form on the page (Rotman 2008: 25), which is what Stiegler refers to as *grammatisation* (2006: 1). The concept of speech at a distance resonates with Plato's objections to writing as a barren, dead discourse that results in a text that is unresponsive and an author who cannot defend themselves (Plato 370 BC in Hamilton and Cairns 1961: 521-522). I borrow this concept to propose that the contents of Morris's *Morning Books* might be positioned as "thoughts at a distance" where, instead of the spoken word, the spatial and temporal conditions of thinking are

¹¹³ In *Becoming Beside Ourselves* (2008), philosopher Brian Rotman makes a connection between gesture and non-alphabetic writing. Rotman suggests that diagrams are "figures of contemplation" that have the ability to produce new ideas (2008: 36). Subsequently, producing diagrams are "bodily executed events" that are not divorced from the body but are the result of organisational and methodological gestures (Rotman 2008: 36). Rotman goes on to explain how gestures that result in non-notational media, such as painting, knitting, and weaving, "embed the feelings, attitudes, and unconscious knowledge of the artist's entire body outside the orbit of any discursive or representational narrative" (Rotman 2008: 43-44).

altered to land on the page. Thoughts at a distance, I propose, suffer a similar fate to speech at a distance in that they are broken down into units, formalised, and represented on the page. In other words, thinking becomes grammatised. This means that documented thoughts (including any embedded modes of emphasis that capture the dynamics of thinking) are translated onto the page, and fixed in time. Nevertheless, thoughts at a distance play a role in an ongoing process of thinking because their externalisation creates a record (tertiary retention) that frees the capacity of the mind to focus on other ideas (see p. 34-37). While the recorded ideas are not responsive in themselves, they can be consulted and studied at a time in the future in a way that would not otherwise be possible has they not been captured on the page.

In thoughts at a distance, the grammatisation process wrenches thoughts and ideas from the psychological, social, and functional circumstance of their creation and transforms them into tertiary retentions through writing, making it possible to revisit this thinking at a later date. It creates a record that can be returned to, feeding into reflective and creative practice. It might be suggested that the reliance on notebooks correlates with retentional finitude and the degree to which knowledge is embodied and interiorised. A lesser degree of embodiment is likely to necessitate a greater reliance on notebook use, which is reflected in creative processes where more numerous notes are usually created in the beginning stages than towards the end. Notebook use combats retentional finitude by enabling the recall or recovery of thoughts and ideas.

Mnemonic Aids

The use of writing to find solutions in practice can be seen in the specific example of how Morris contemplates her use of terminology in transmitting dance and movement knowledge. In the excerpt below, Morris thinks about the mnemonic function of names:

What's in a name? a great deal! can either be an anatomical description which helps you to remember the movement (if you can remember the name!) or it can be so silly that somehow it sticks in your mind! I have found that even the most serious people usually like the silly names because they remember them (& can't forget them?) That the young and the old like silly names—I do myself. So the goal [...] is to give something of real value in an accessible [?] form—the silly names will be the main ones—with the 'serious' ones to follow. (1955b: 9 August)

For Morris, "silly names" provide a pathway that aids the retention of "serious" concepts. In musing about the relationship between language and conscious thought, she writes:

The value of a movement 'sequence' with words (that sounds silly) and thoughts-Is the best thing you have to 'give'— (let come through) How? not yet clear! First test by regular 'doing' yourself Then test by teaching others Today it comes to me that the mear [sic] 'doing' of the 'sequence'—without words or 'conscious thought' may have its value? (i.e. prayer wheels, rosaries !!???) Try this out too –[unintelligible] The movement-jesture [sic]-may become command to unconceas [sic]? (Morris 1959c: 22 March [emphasis in original])

This entry combines ideas about the value of informal and formal vocabularies for the transmission of movement knowledge, and it seems that Morris uses terminology that is grounded and tested in her solo practice and then trialled by others. Morris equates vocabularies with the conscious processing of information and asserts that carefully selected names can support memory and knowledge acquisition without taxing the conscious mind. Morris also contemplates the value of not using names and the possibility of relying on the physical expression of the body, a gesture, to recall the sequence of steps and knowledge instead. It is unclear whether this is through the dance alone or through a codified approach of physical notation. Morris uses prayer wheels and rosary beads as examples of devices that help to recall a specific pattern of information. In the case of prayer wheels and rosary beads, this is the order of prayer, while the equivalent for MMM might be the order of exercises in the syllabus.

Notebook Markings and Annotation

De Laet, Cassiers, and Van den Dries (2015), who studied the notebooks of theatre directors Jan Fabre and Jan Lauwer, refer to notebook markings as *annotations*. This claim arises from their understanding that writing and sketching make aspects of imagination visible and, therefore, serve as crucial preperformance structural tools. De Laet, Cassiers, and Van den Dries propose that what they refer to as *annotation* "permeates the preparatory stages preceding the actual staging" of work (2015: 43). The proposal that annotation can occur prior to the existence of the work, however, is to miss the crucial mark-up property of annotation, unless they are responsive to an already existing artefact (i.e. annotating notebook contents). Positioning notebook markings as annotation is challenging, primarily
because of the absence of spatial and temporal contextualisation to an original source of inscription. At a stretch, one could argue that the mnemotechnical properties of writing can be characterised as a process of annotation because it is a technique that supports and advances thinking. Yet this is problematic. The grammatisation of thinking through writing is less about creating layers of meaning and more about creating a record. Before it can be annotated, thinking needs to be mediated to enable a differentiation between the original and secondary layers of inscription. It is useful here to return to the discussion of how Morris's embedded mark-up techniques reveal the dynamics of thoughts at a distance. In this instance, annotation is attached to a record of thinking rather than to thinking itself. Morris's example makes it possible to challenge the assumption that annotation is a layer of information created over a tangible object (a text, image, or video etc.), which implies that it only happens after the fact. Instead, I propose that annotation can also happen in the moment as part of an embedded mark-up activity, but not before the grammatisation of thinking.

Summary

Notebooks are artefacts that reveal work in progress. The function, value, and meaning of their contents are situational, determined by the intentions and motivations of their user. This chapter has explored the mnemotechnical function of Morris's personal notebooks. In acknowledging retentional finitude and the instability of thinking as a temporal activity, I have argued that notebooks facilitate and support the retention and recovery of not-yet-embodied ideas because of how they stabilise an individual's thinking in the form of tertiary retentions through a process of grammatisation. They provide a site for problem-solving and extended thinking.

Notebooks clearly serve a different function to systems of dance and movement notation which result in public documents (notation scores) that are designed to be read by a particular community. The fate of these systems is determined by their ongoing application and development by a community of users to ensure their suitability for dance practices, even if they evade the skillset of a wider dance community and general public.

From the perspective of the analyst, however, it is important to recognise that notebook markings concretise a moment in time, capturing a snapshot of ideas in their formation. While this provides insight into the inner life of the notebook user, one must not fail to recognise that the thinking of the individual cannot be fully known. Notebooks' contents are mere traces of thinking, where ideas that are in flux and in a transitory state are wrenched out of their original context and laid to rest on the page, resulting in thoughts at a distance. These thoughts cannot explain or defend themselves, and

neither can Morris, meaning that it is important to contextualise their contents as personal and often private musings about an individual's practice. These primary sources contain a force of expression, a dynamism of thinking that links to Morris's aspirations and goals. As part of an archival collection, Morris's *Morning Books* support a contemporary understanding of twentieth century natural movement practices, the development of Danscript, and the personal history of a movement pioneer.

Chapter Four examined selected systems of dance and movement notation from both the Renaissance and twentieth century in order to identify how ideas about documenting dance through notation evolves according to social and technological factors. The examples of Labanotation and Danscript indicate that the analytic heritage of traditional notational systems is one of invention and reinvention, modifying existing approaches to meet artist's needs. The debates in the press concerning the efficacy of Labanotation and BMN showed the importance of institutional backing and support from a community of users for the success of a given system. Today, the teaching and professional use of notation practices in general is not widespread, prompting a need to consider what analytic and documentary technologies are available to the dance community and how accessible they are.

In comparison to traditional and codified methods of dance and movement notation, the use of choreographic notebooks is widespread. Commonly understood to be a valuable process-oriented tool, notebooks allow for the documentation and development of ideas and thinking, as this chapter has shown in relation to the work of a single dance practitioner. The function of notebooks is different to the function of notation as the intention of the latter is to capture an accurate translation of a complete choreographic work (although the process of translation is informed by the creation and rehearsals of that work). Furthermore, notebooks typically function as personal or private documents while notations systems are intended to produce public artefacts. Looking at these two different approaches to documentation reveals that notation creates analytic representations of dance intended to circulate as public artefacts yet are accessible to only the specialist notator, while notebooks are ubiquitous but rarely shared. Moreover, the notation score is created through prescriptive frameworks that typically capture formalist properties while notebooks can reveal how ideas develop over time.

I now turn my focus to video annotation which has the potential to unite a translation of a choreographic work or movement practice (in the format of video), with an analytic method (annotation), and the insights that arise through the dance experience from multiple perspectives. In the next chapter, I analyse four multi-media publications that feature different kinds of annotation to

uncover what video annotation offers dance studies as a method of analysis and documentation that is in its infancy relative to dance and movement notation. I discuss how annotations re-author video content thereby transforming the viewing experience of dance video, the labour involved in decoding annotations, and how annotation enables insider perspectives of the dance to be documented.

CHAPTER SIX: READING VIDEO ANNOTATION

Zuniga Shaw proposes that the "twin questions of what constitutes choreographic knowledge and what traces it may or may not leave behind are perennial concerns in dance" (2014: 95). These are recurrent themes in this research which contemplates what video annotation, as a fairly recent method of dance analysis, offers dance scholarship. In search of suitable methods to articulate and transmit the artistic philosophies and organisational principles that characterise particular movement practices, a diverse set of multi-media publications have emerged in the past two decades that seek to make dance and movement knowledge explicit through digital media.¹¹⁴ I take this chapter as an opportunity for an in-depth examination of the four multi-media publications introduced in Chapter Two: Improvisation Technologies (Forsythe et al. 2012), Material for the Spine (Paxton and Contredanse 2008), Synchronous Objects (Forsythe and OSU 2009), and Using the Sky (Hay and Motion Bank 2013). These publications use video as the primary method of documentation. They are of interest to this research because of how annotation is used to give prominence to details of movement practice in a way that is assumed to increase the utility and value of the original video materials. Such publications, Leach (2017) suggests, are driven by an impetus to inform general audiences and attract a broad readership for dance. In doing so, they take knowledge that has been abstracted from artistic processes and present it in a space that is not specific only to the dance domain (Leach 2017).

On the assumption that something valuable may be elicited from video annotations, my study describes and analyses how they are used for the elucidation of dance and movement knowledge. To begin, I discuss how the spatial and temporal properties of annotations, and their relationship to the video content, determines their visibility. I show how gesture and voice can be positioned as forms of mark-up activity, despite challenges in conceiving them as such. Turning the focus to graphical annotation followed by text-based annotation, a descriptive analysis of video excerpts examines the mechanics and function of annotation and what they offer dance viewing. Finally, I compare my experience of studying the four publications to come to some conclusions about the extent to which annotations innovate how dance and movement knowledge is articulated and transmitted.

The Visibility of Annotation

Improvisation Technologies, Material for the Spine, Synchronous Objects, and Using the Sky are as

¹¹⁴ These include, but are not limited to, *Improvisation Technologies* (Forsythe et al. 2012), *Material for the Spine* (Paxton and Contredanse 2008), *Synchronous Objects for One Flat Thing, reproduced* (Forsythe and OSU 2009), the Motion Bank scores (Burrows, Fargion and Motion Bank 2013; Hay and Motion Bank 2013; and Miller, Hauert and Motion Bank 2013), *Oral Site* (Sarma n.d.), and *Drumming and Rain* (de Keersmaeker and Cvejić 2014).

diverse as the artistic and movement philosophies to which they draw attention. Shaped by the research questions, ideas, and interests of the artist and research team, the publications offer an authoritative insight into individual movement practices. The four multi-media publications can be described as pedagogical resources that articulate and transmit principles of movement practices in a way that can be identified and studied by the viewer, supposedly without having prior experience in viewing dance. In one way or another, the publications are comprised of building blocks that aggregate to form a fuller picture of a particular movement practice and, in the case of *Synchronous Objects* and *Using the Sky*, a choreographic work.

Improvisation Technologies and *Material for the Spine* focus on isolated movement tasks. These tasks are shown through physical demonstration while descriptive and analytic layers are created through voice and gesture. In some instances, voice and gesture are used to select, isolate, and emphasise key movement details. These combined approaches transmit the thinking or knowledge behind the task. The verbal and gestural layers of description and modes of emphasis, I propose, are embedded forms of annotation.



Figure 19 (left) and **Figure 20 (right):** Examples of vocal and gestural embedded annotations in *Improvisation Technologies*. A graphical annotation can be seen in Figure 19 also.

Figures 19 and 20 are screenshots of *Imagining Lines: point point line,* an exercise from *Improvisation Technologies,* where gesture and voice support the delivery of the task. In Figure 19, Forsythe's arm gestures reveal a graphical white line suspended in space. This line is imaginary but made visible in the video through computer graphics. In Figure 20, Forsythe can be seen pointing to his forearm to draw attention to a line within the body. In the video, in the moment prior to what this screenshot demonstrates, the line had been established in space using computer graphics. In the moments following this screenshot, Forsythe describes how the line in the forearm is constructed by connecting two points selected with his index finger: the wrist and the elbow.

The function of the gestures described in *Imagining Lines* is to introduce and emphasise an imaginary line in space (Figure 19) and then in the body (Figure 20). Forsythe's gestures are not part of the movement task itself (of imagining the lines and reproducing them in space or in the body) but can be described as augmenting forms, helping the viewer to see key details in the work. The gestures are, however, embedded in the delivery of the task and do not alter the aesthetic of the video as the computer graphics do. This makes the classification of gestural forms of augmentation as forms of annotation difficult. The classification of verbal augmentations as annotation is even more challenging, because, unlike gestures, speech does not materialise as a spatialised form. Vocal and gestural methods of augmentation and emphasis are ephemeral and thus unstable in their manifestation, because they are performed by the body. Nevertheless, in Imagining Lines they have been stabilised through filming meaning that there is a record that can be studied time and time again. Qualitatively speaking, I argue that voice and gesture can provide a layer of instruction or emphasis in a way that is similar to how Morris disclosed the dynamics of her thinking through mark-up activity that was embedded in the moment of writing. Still, while Forsythe's verbal commentary and gestural emphasis is crucial to the explanation of his ideas in *Improvisation Technologies*, it is as a result of my study into annotation that I am able to characterise them as forms of mark-up activity and as bodily forms of annotation.

To strengthen the case that verbal commentary and gestural emphasis can be classified as annotation forms, a comparison can be made to the embedded annotations in print sources. Footnotes, as appendage to the text for example, provide readers with supporting statements or a reference space and while they are responsive to the text they are not part of it (see p. 47). The same can be said for Forsythe's commentary: it exists in addition to imagining of lines in order to provides an explanatory space. In manuscripts in the twelfth to eighteenth century, index fingers (manicules) were drawn to point the reader to "noteworthy passages" (Sherman 2005: 19). In *Imagining Lines,* a real-life physical manicule (as seen in Figure 20) is similarly used to direct the viewer's attention to important details. Embedded in the delivery of movement tasks, voice and gesture give the impression of spontaneity; yet, I argue, they are authoritative and deeply embodied articulations of movement knowledge.

Here, it is important to note that voice and gesture can also be used to create a separate descriptive or analytic layer over videoed material, an example of which can be seen in Figure 21 (p. 150). *Looking at Forms: Comments on Helix Roll* is a chapter from *Material for the Spine* features a dancer executing a helix roll, which is a difficult exercise from Paxton's syllabus that is characterised by a co-ordinated spiralling of the body halves to create a double helix body design. A video of this roll is projected onto the floor and is played on a loop which alludes to the necessity of repetition to improve technical



Figure 21: Extract from *Material For the Spine - a movement study* by Steve Paxton, Baptiste Andrien & Florence Corin (Contredanse), Contredanse Editions, 2008 - 2019. <u>www.materialforthespine.com</u>

execution as a mover. For the *Material for the Spine* viewer, the repetition also helps to develop the analytic eye. In *Looking at Forms*, Paxton is filmed closely interacting with the video projection, and it is this that constitutes the annotation layer. Paxton's pointing gesture (Figure 21), a real-life manicule, selects and isolates movement details to bring them to the attention of the viewer while he verbally explains the principles of the roll and provides feedback on the dancer's

physical execution. These are intentional approaches to augmenting the projected video source. As they are captured on video, Paxton's speech and gestures are stabilised, meaning that they are available for study. Importantly, a visible annotation layer is created through the association between the original source (the video projection) and the mark-up activity.

The examples from *Imaging Lines* and *Looking at Forms* suggest that annotation is not limited to writing and computation but can also be bodily forms. This means that not all approaches to annotation are grammatised as stable forms and may, therefore, resist prolonged study. This is not grammatisation in the strictest sense of the phenomena, as bodily forms of mark-up do not manifest as tertiary retentions and the cited examples can be studied only because they are captured on film. That annotation may be bodily forms is a contentious suggestion, primarily because there is not an explicit contrast between the movement tasks and their mark-up and also because there is a fine line between voice and gesture as forms of annotation and as an inextricable part of delivery. I propose, however, that the success of annotation as a communicative vehicle relies on its specificity, and, despite their transient nature, voice and gesture concretise dance and movement knowledge in a way that is accessible to a community of users.

For the remainder of this chapter, I focus on graphical and text-based annotations utilised in the intentional analytic and annotational activity undertaken for *Improvisation Technologies, Material for the Spine, Synchronous Objects,* and *Using the Sky.* I look at examples where video is the original source of information and the base layer upon which annotations are created or are linked to. This allows me to highlight the dialogical mnemotechnical characteristic of video annotation.

Graphical annotations are perhaps the most recognisable forms of video annotation in dance. Those that are analysed in this chapter vary from pixel-by-pixel lines drawn using tools such as DancePro or

those produced in post-production using animation tools. Figure 22, a screenshot from Material for the Spine: Puzzle 1, Analyse, features graphical annotations that appear to have been drawn on top of the video. The annotations are compelling to look at because of how they contrast with the aesthetic of the video to create a distinguishable augmenting layer. They create a visual anchor that ties the viewer's attention to the curved design of Paxton's arms, a detail that might not otherwise have been at the forefront of the viewer's attention. Consequently, graphical annotations direct attention in a way that alters the viewing experience of dance.



Figure 22: Screenshot from *Material for the Spine* that shows direct layer graphical annotations. Extract from Material For the Spine - a movement study by Steve Paxton, Baptiste Andrien & Florence Corin (Contredanse), Contredanse Editions, 2008 -2019. www.materialforthespine.com

The chapter also examines what I refer to as digital marginalia and linked annotation, two forms of text-based annotations. The screenshot in Figure 23 is from *Using the Sky* and shows a column of text to either side of the video image. This text, which I refer to as *digital marginalia*, provides a commentary on the dance that is intended to support the viewer's interpretation. Unlike the graphical annotations in Figure 22, digital marginalia do not draw the eye to any obvious point in the video, and it is up to the viewer to make the connection between the text and the video. Functioning as hidden organisational and navigational tools, the linked annotations in *Using the Sky* have a different aesthetic value and different function to graphical annotations. The data-linking property of these



Figure 23: Digital marginalia and linked annotation in *Using the Sky*. Image reproduced with kind permission of Motion Bank.

annotations forges connections between the digital marginalia, corresponding points in the video, and other analytic materials such as movement pathways (visible to the right of the bottom video image in Figure 23). The viewer navigates these annotations using the numbers or tabs to the right of the columns containing the text.

This section has briefly introduced a range of annotation types: embedded verbal and gestural forms, voice and gesture as a descriptive or analytic layer, graphical annotation, digital marginalia, and linked

annotation. The variety of annotation activity suggests that annotation can exist as a more or less visible layer, characterised by the spatial and temporal relationship between the annotation and the source. The focus on graphical and text-based annotations in the remainder of the chapter helps me explore to what extent the aesthetic and visibility of annotation impacts what the viewer sees in, and understands about, dance and to determine the significance of the spatial and temporal relationship between annotation and the video in creating meaning and value.

Graphical Annotations

Graphical annotation contrasts the aesthetic of a source and creates a distinguishable mark-up layer. My analysis reveals that there are subtle, but significant, differences in the construction of graphical annotations which are instrumental in emphasising particular qualitative detail and for meaning-making. To show this, I describe examples of annotation from *Improvisation Technologies* and *Material for the Spine* and characterise them as either object or sequential forms. These publications are useful here because of how they introduce isolated movement tasks and make it possible to focus on single instances of annotation. I then examine how object and sequential graphical annotations are used in more complex settings and analyse excerpts from *Alignment Annotations* and *Cue Annotations* from *Synchronous Objects*. Although the focus is directed towards examples of annotation, my descriptive analysis reveals a dialogical quality between the annotation and video that is crucial to the mark-up status of annotation.

Object and Sequential Graphical Annotations

I use the term object annotation to refer to graphical annotations that appear as completed forms and retain their shape irrespective of whether they remain fixed in their on-screen location or move with the video content. Sequential annotations, as their name suggests, unfold over time. They may be sequential in both their appearance and disappearance, or begin as sequential forms and then transform into object annotations. The latter means that the fullness of the annotation's shape is retained to leave a trace of their unfolding. Forsythe's Inscriptive

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Figure 24 (top) and **Figure 25 (bottom):** Screenshots of *Inscriptive Modes* from *Improvisation Technologies* that show a sequential graphical annotation becoming an object annotation in the moment of its creation.

Modes (Figures 24 and 25) is an example of how a sequential annotation transforms into an object form, but this is momentary: it disappears once the entire form has materialised (not shown). The meaning of this annotation is explicit. It translates Forsythe's thinking into a graphical form and provides visual clarity, making it look as though Forsythe is drawing the annotation with his elbow. In my study of graphical annotations, I have yet to find an example of a sequential annotation disappearing in the very moment that it unfolds; there is always a time delay. This is crucial because annotations need to be readable if they are to have meaning and value for the viewer: they must linger for long enough to be identified and then decoded.

U-Lines uses graphical annotation to visualise an imagined spatial scaffolding as a frame of reference for how Forsythe generates movement. This scaffolding is created in two stages. First, a framework resembling a dimensional cross appears (Figure 26) appears as an object annotation.¹¹⁵ This structure was first introduced in detail in the preceding



Figure 26: Screenshot from *U-Lines* that shows an object annotation in the form of a dimensional cross.

chapter *U-Lines* (*U Approaches*) using sequential annotations.¹¹⁶ In *U-Lines*, because the structure has already been introduced it now serves as a point of departure for a new movement task.¹¹⁷

In *U-Lines*, the bottom half of the structure's vertical axis is shorter than in *U Approaches*, drawing attention to only as much as is necessary for the task in hand. The structure appears at the level of the upper torso, which enables Forsythe to comfortably introduce movement tasks through arm gestures and without full-body exertion. Critically, the interpretation that Forsythe is moving around, and is responsive to, the annotational structure is misleading, because he is, in fact, responding to the structure that he visualises in his mind. It is after Forsythe's execution and introduction of this movement task is filmed that the structures are given graphical value through annotation. This example indicates the dominance of the graphical annotations in viewing. Nevertheless, the

¹¹⁵ The dimensional cross is a theoretical spatial construct used in LMA that consists of six directions (place high, place low, forwards middle, backwards middle, side right, and side left) and three dimensions (vertical, horizontal, and sagittal). The sagittal dimension refers to the forwards-backwards space of the kinesphere, which is also referred to as the *wheel plane*.

¹¹⁶ In *U Approaches*, the vertical dimension is in keeping with what one would use in LMA.

¹¹⁷ The information in *Improvisation Technologies* is intentionally cumulative and quickly builds in complexity, meaning that the viewer is best advised to explore the chapters in turn to build understanding. The remaining three publications can be viewed in a non-linear fashion without impacting comprehension.

annotations are responsible for grammatising Forsythe's thinking, which makes it possible for the viewer to recognise his creative physical response to the geometrical spatial structure.

The dimensional cross creates a blueprint for the arrival of a second object annotation, a rollercoaster-

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movement of U-ing. Attention is also drawn to Forsythe's forearm as movement initiator through annotation.

shaped form. For Forsythe, the dimensional cross structure that he imagines but is visible to the view through graphical annotation helps to ensure parity in the degree of under-curve and over-curve to create the movement for the new imagined structure (Figure 27). The layering of these two annotations completes the spatial Figure 27: An object annotation that shows the rollercoaster structure which retains its permanence, fixed in its location on the screen in preparation for the

movement task that follows. The spatial scaffolding indicates the importance of establishing a clear referential framework for movement that will be generated along the rollercoaster pathway. That this framework is visualised in advance of the movement generated makes it possible to characterise these object annotations as anticipatory data. In other words, the annotations serve as a structural tool put in place for movement thinking,

Forsythe's On Projected Body features an object annotation in the form of Forsythe's transparent

torso. It is an image annotation. This appears on the floor in front of Forsythe, attached to his feet like Peter Pan's shadow (Figure 28). On Projected Body invites the mover to imagine and describe with the body the shape of a soft body part, such as an internal organ or the contours of a fingerprint. Forsythe demonstrates describing the bronchi of the lungs with the foot, resulting in interesting residual movement

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Figure 28: Screenshot of On Projected Body from Improvisation Technologies that shows an anticipatory object annotation.

in the rest of the body. This is another example of anticipatory data that create a framework for creative movement response.

Pointing: Relation to Scapula in *Material for the Spine* uses a combination of object and sequential annotations to show the muscular-skeletal connectivity of the body in the action of pointing. Movement details are introduced in a voiceover, making it appear as though the on-screen movement manifests in response. Graphical annotations are responsive to the voiceover and are used to illustrate



Figure 29: Screenshot from *Pointing: Relation to Scapula* that shows an object annotation that identifies the location of the scapula. Image: *Material For the Spine - a movement study* by Steve Paxton, Baptiste Andrien & Florence Corin (Contredanse), Contredanse Editions, 2008 - 2019. www.materialforthespine.com

movement details. A yellow triangular annotation foregrounds the scapula, a bone usually hidden under layers of muscular and connective tissue and not usually accessible through observation alone (Figure 29). When the arm moves, the annotation maintains its spatial relationship to the body, drawing attention to how the scapula glides and rotates on the back. The annotation also exposes a causal relationship to the index finger, which has also been highlighted with

an object annotation. These annotations form the first stage of an explanatory video introducing how subtle changes at the extremities of the body result in larger physical changes (Figure 31).



Figure 30 (left): A combination of object and sequential annotations demonstrates the kinetic chain from the sacrum through to the fingertips and beyond. **Figure 31 (right):** Object and sequential annotations demonstrate the kinetic chain from the skull through to the thumb and projecting *Qi* into the general space. Images: Extract from *Material For the Spine* - *a movement study* by Steve Paxton, Baptiste Andrien & Florence Corin (Contredanse), Contredanse Editions, 2008 - 2019. <u>www.materialforthespine.com</u>

The annotations in Figure 30 illustrate the connectivity between three bony landmarks: the sacrum at the base of the spine, the scapula, and the ring and little fingers; in Figure 31 they illustrate the connectivity between the base of the skull, the scapula, and the thumb. Drawing attention to these landmarks through annotation helps to challenge a common assumption that the arm starts at the shoulder crease, an understanding that would translate in the severing of movement from the pelvis and torso and result in an empty and unconvincing pointing gesture. Expert readers of movement may

be able to identify the deep connection of the arms to the core from the movement alone, but the annotations explicitly articulate this information, making it understandable by anyone, irrespective of experience. The annotations transmit movement knowledge in a way that is important for Paxton's movement philosophy and concretises the focus of the exercise.

The kinetic chain in the action of pointing, according to Paxton (in Paxton and Contredanse 2008), originates in the pelvis then moves up the torso, along the arm, and outwards beyond the tip of the finger. In *Pointing: Relation to Scapula*, this kinetic chain is visualised through sequential annotations that unfold as though being drawn in real-time. To locate the start of the kinetic chain, a yellow circle is drawn on top of the sacrum. From this, a pathway is drawn up towards the scapula, along the underside of the arm, and to the digit(s) initiating the pointing action (Figure 30). As it unfolds, this sequential annotation becomes an object annotation to expose its full form, revealing an intentional projection of energy into the space beyond the **kinesphere** (Figures 30 and 31). This projection is an example of virtual movement, an illusion created through an intentional use of space. It is a concept that Paxton refers to as *Qi*, borrowed from Aikido.¹¹⁸ *Qi* is unconsciously used and implicitly understood, a fundamental quality not only in dance but also in everyday movement (Paxton and Walker Arts Centre 2014). In Figure 30, the graphical line divides into two paths from the elbow to demonstrate a slight variation in how *Qi* is projected through two different fingers.

Looking at Forms: Puzzle 1, Analyse also uses a combination of object and sequential forms to draw attention to anatomical structures of the body, the virtual content of movement, and the form or shape of the body in motion. The DVD-ROM chapter begins with a still frame: a close-up of Paxton sat cross-legged on the floor in a workshop setting. A yellow graphical line appears, unfolding from the base to the top of the spine as though it is being drawn in the very moment of watching (Figure 32, p.157). As it is drawn, the annotation becomes an object form to maintain the spine (as the central vertical axis) as a reference point. A second sequential turned object annotation is drawn from the centre of the spine at the level of the sternum and outwards towards the right and left sides of the body in an upwards pathway (Figure 33, p. 157). The impact of this second annotation of Paxton's arms, which are extended slightly higher than to the side of the body with a slight bend in the elbow, while the annotations in Figure 33 shows the intention of creating a circle with the arms. The relationship between the annotations and the body in Figure 33 shows how annotation shapes the

¹¹⁸ Aikido is a martial art derived from ancient Japanese martial arts. It teaches powerful self-defence techniques that emphasise re-directing the force of one's opponent without intending to inflict any harm.

source to draw attention to an idea that does not exist in the form of the physical body but in the mover's intention.



The still frame transforms into a moving image, and Paxton's posture becomes the starting position for a roll that transitions through a lateral sequencing of the torso towards the floor (Figure 34), onto his back, and returning to sitting through the grounding of the sitting bones that upright the pelvis (Figure 35). The annotations drawn on top of the still frame retain their original spatial association to the body and move with Paxton to maintain their meaning. Throughout this sequence, Paxton describes the mechanical and intentional execution of the roll (embedded verbal annotations) and graphical annotations are responsive illustrative forms. A sequential line is drawn vertically from the skull out into the kinespheric space to represent movement initiation (Figure 34). This is followed by two small circles drawn at the base of the spine to reinforce the important technical detail of initiating through the sitting bones to upright the pelvis and effect the sequential motion of the spine to return to sitting (Figure 35). These illustrative annotations concretise the physical and verbal delivery of information in the movement task to create a supportive pedagogical layer that guides viewers through the execution of the roll. Despite what appear to be carefully designed annotations, their soft and fluid form gives the impression of informality, which feels important for understanding the exercise in its formation. Experienced movers may be able to draw a connection between the quality

Figure

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(bottom right): Annotations

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identify the location of the sitting

[bottom left]: The spatial intention of movement is indicated using annotation

Figure 32 (top left): A sequential annotation draws attention to the spine. Figure (top right): Attention is drawn to the spherical design of the arms. Figure 34

ω

of these annotations and the fluidity and softness of the spine necessary for movement efficiency in this roll.

Helix Roll: Led by Hands in *Material for the Spine* alternates annotations with video content, inviting the viewer to be active in how they make sense of the information presented.¹¹⁹ A demonstration of the helix roll is played on a continuous loop. Two slender white lines then fade into view, coiling around each other to create a visually striking three-dimensional structure (Figures 36 and 37, p. 159). The annotation structure spirals to replicate the impressive speed and ease with which the mover executes the roll underneath. The shaping of the annotations does not precisely match the spiral of the moving body but reveals the objective form, spatial intention, and spatial projection for the successful execution of the roll. I propose that these annotations offer a "corrective re-authoring" of the video content, providing an improved version of the original. While more time could have been taken to create a more "truthful" annotation, this would miss the pedagogical value of annotation in this instance.

The relationship established between the moving body and the annotations in *Helix Roll* is fleeting. Almost as soon as the annotations appear, the moving body fades from view. This leaves only the annotations visible (Figure 37), temporarily orphaned from their original context and giving the viewer time to contemplate the spatial intentions of this complex roll in an abstract form. This separation is momentary: the moving body fades into the foreground while the annotations recede into the background, quickly disappearing from view. In this short sequence of events, the annotations first appear in response to the video content, they then become anticipatory data drawing attention to the spatial organisation of the body as orphaned annotations, before becoming illustrative forms that work with the video content to guide the viewer's attention. This visual interplay challenges the viewer to become active in decoding the annotations, and the video and annotation together serve as an interpretative check.

¹¹⁹ The same approach is also used for *Helix Roll: Led by Feet,* and *Crescent Roll: Led by Feet,* although the latter uses a parallel formation to identify the homo-lateral movement pattern.



Figure 36 (above): Graphical lines layered over the moving body. **Figure 37** (below): Orphaned object annotations. Images: Extracts from *Material For the Spine - a movement study* by Steve Paxton, Baptiste Andrien & Florence Corin (Contredanse), Contredanse Editions, 2008 - 2019. <u>www.materialforthespine.com</u>



In the examples from *Improvisation Technologies* and *Material for the Spine* described above, object annotations concretise imagined spatial structures that are external to the physical body. These are used as a reference point for movement or anticipatory data (in Forsythe: *U-Lines* and *On Projected Body*), are illustrative forms that draw attention to the structural organisation of the moving body (in Paxton: *Looking at Forms: Puzzle 1, Analyse* and *Helix Roll*), or are used to isolate and locate parts of the body to support the introduction of ideas (in Forsythe and Paxton). From this, it is possible to recognise a focus on external spatial structures in Forsythe's improvisational practice and tendency toward internal spatial structures in Paxton's practice. There is a subtle but significant qualitative difference between the information conveyed through object annotations and sequential annotations, which contributes to the construction of meaning. The dialogical relationship between the annotations and the video content demonstrates that annotations are not passive, nor merely a layer of information over a source, but are active in meaning-making.

Synchronous Objects: Alignment Annotations

This section looks at how graphical annotations are used to weave a complex tapestry to illuminate the spatial and temporal organisation of the choreographic work *One Flat Thing, reproduced*. *Alignment Annotations* claim to make the "spatial and temporal patterns of the dance's alignments spring into view as you watch" (Forsythe and OSU 2009). Colour-coded annotations combine to create a visual representational system, which emerged through the careful study and the painstaking labour of analysis and annotation (Forsythe and OSU 2009). The graphical annotations expose moments of synchronicity in a way that, with sufficient study, can help the viewer make sense of the fast-paced and complex movement.

In initial viewings, *Alignment Annotations* appear to foreground movement trace forms, and I contemplated to what extent their analysis would reveal any habitual spatial pathways of the dancers' movement. My analysis revealed a tendency towards annotating the peripheral spatial progressions of movement pathways while often overlooking the richness and intricacy of central and transverse pathways.¹²⁰ The annotations appear to arise from a free-end fixed-end analysis.¹²¹ This means that the limb's point of attachment to the body creates an axis for the free-end to move around, resulting in a circular trace form. The trace forms are represented using sequential annotations that become

¹²⁰ Central pathways are initiated from or pass through the center of the body, and transverse pathways pass between the center and the periphery of the kinesphere.

¹²¹ Free-end fixed-end analysis is a Labanotation concept that determines the direction of movement of the arms or legs. The fixed-end is the point of attachment of the limb to the torso, and the free-end refers to the end of the limb.

object annotations before fading from view, allowing their shape to resonate with the viewer. Limbs reaching towards the limits of the kinesphere create large trace forms (Figure 38, p. 162), while limbs moving more closely to the body's centre (or when the body turns around its axis) result in smaller forms (Figure 39, p. 162). The resulting annotations are often perfect circles but the circular form is stretched if the dancer travels away from the movement origin as the trace form unfolds. The tapering of the graphical lines notifies us of the direction of movement pathway; the thicker end indicates the movement origin while the pointed end reveals the end point.¹²²

The graphical annotations are carefully constructed to match the speed and spatial properties of the dancers' movement, which determine their visibility and accessibility. As a result, and perhaps unintentionally, a hierarchy of annotational forms is created. The crisp white sequential lines that draw attention to movement trace forms (described above) dominate viewing to such an extent that other graphical annotations are less pronounced and recede into the background, at least in initial viewings. This is because the length, thickness, and dynamic of graphical annotations are determined by movement details to which they correlate. Those that occupy less time and space are often less explicit and undemanding of the viewer's attention. One such example are the blue comet-like forms that energetically dart through the space, which draw attention to vertical or horizontal shifts of the body. This can be seen in Figure 40 (p. 163), where the synchronicity between the dancer on stage right (who is jumping whilst inverting their torso) and the dancer on stage left (who is plunging their right arm from high to low) is identified. These annotations can be easily identified in this screenshot, because they are isolated and fixed in time. When the video plays, however, they are subtler because they have less of a contrast with the aesthetic of the video than other graphical forms. These annotations are effectively hidden amongst the rich tapestry of the dancers' movements and other graphical annotations until they reveal themselves through the viewer's repeated and studious viewing.

¹²² There are examples where this tapering is not visible. However, these appears to be anomalies rather than intentional.

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Figure 38 (above): Screenshot from *Alignment Annotations* that shows the peripheral pathways of movement visualised through long slender sequential annotations. Image: Synchronous Objects Project, The Ohio State University and The Forsythe Company. **Figure 39 (below):** Screenshot from *Alignment Annotations* that shows short, thicker sequential annotations used to represent pathways in close proximity to the body.

Figure has been removed due to Copyright restrictions

Figure has been removed due to Copyright restrictions

Figure 40: Screenshot from Alignment Annotations that features blue comet-like graphic lines.

Other examples of "hidden" annotations include the perforated white graphical lines that show the angles between limbs in the dancers' body designs (Figure 41) and the small blue and white object annotations that identify punctuated movement, moments of impact, or points of contact between dancers (Figure 42). These annotations arrive on screen as object annotations to indicate a movement that is "hit," or arrived at, rather than passed through. These annotations also provide qualitative insight into synchronous encounters and variance-and therefore to the information articulated through sequential forms. Nevertheless, these small fleeting annotations are difficult to detect amongst the speed and complexity of the movement. This makes them less powerful forms than the annotations that draw attention to



Figure 41 (top): A screenshot from *Alignment Annotations* that features perforated graphical lines that identify details of the dancer's body design. Figure 42 (bottom): A circular object annotation reveals an imagined point of contact between one dancer's foot and another's forehead.

movement trace forms, and even the blue comet-like forms described above.

Alignment Annotations features a system of visual representations comprised of colour-coded annotations that guides the viewer in where to look. Nevertheless, the hierarchy of graphical annotations makes it difficult for the viewer to avoid being seduced by those forms that dominate. To achieve a sophisticated understanding of the choreography that goes beyond what can be accessed through initial viewings alone, the viewer has to commit to a close and deep reading of the video, and this demands a great deal of intrigue and curiosity to look beyond preliminary interpretations.

Synchronous Objects: Cue Annotations

Cue Annotations is the second example from *Synchronous Objects* that is analysed in this chapter, as it uses annotation to draw attention to the "rapidly shifting network of relations" that is the giving and receiving of cues in *One Flat Thing, reproduced* (Forsythe and OSU 2009). The cueing system is described as the "internal clock of the dance," responsible for the pace and flow of the work (Zuniga Shaw 2017: 101-103). The complex and elaborate nature of the cueing system in *One Flat Thing, reproduced* is such that no one person knew the structure of the work in its entirety, until it was mapped and documented and became knowable through the resulting artefacts. The artefacts bring the distributed knowledge of the work into a single space, by which I mean that the dancers' individual understanding come together to create an account of the cueing system, ordinarily distributed amongst the seventeen dancers of the work, becomes retrievable and knowable by anyone prepared to translate the data. *Cue Annotations* offers another account of the cueing data, visualising the internal clock of the dance through a tightly choreographed graphical annotational system.

Figure has been removed due to Copyright restrictions

Figure 43: A visual score of the transmission and receiving cues in One Flat Thing, reproduced.

In *Cue Annotations*, the cue giver is identified by a white circular object annotation that bursts onto the screen and surrounds the dancer, creating a snug frame as if to draw attention to their kinesphere (Figure 44). This annotation directs the viewer to the origin of a cue before it is given, and the immanence of the cue is signalled by a pulsating action, like the preparatory fist action for rock, paper, scissors ("1, 2, 3"). The annotation serves as anticipatory data. This preparatory stage is complete in a fraction of a second before the annotational focus shifts towards visualising the relationship between

the cue giver and cue receiver(s).

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Figure 44: Screenshot from *Cue Annotations* that shows anticipatory object annotations used to identify the cue giver and serve an anticipatory function for the viewer. Image: Synchronous Objects Project, The Ohio State University and The Forsythe Company.

Brightly coloured sequential lines carve a pathway from the cue giver towards the cue receiver(s) and where a single cue is received by multiple dancers, the annotation forks in its pathway (Figures 45-48, p.166). The annotations wriggle rapidly through the space with the quality of a sea snake; their speed and dynamic give the impression of spontaneity, as though they have a life of their own. These sequential annotations become object annotations, leaving behind a trace of their existence as they unfold. The annotations are striking and attractive and coerce the viewer's attention towards the particular details they highlight. They serve an arrow-like function, a navigational device that carries the viewer's attention with them through space. On impact with the cue receiver(s), the cue annotation disperses to create a visible point of attachment, a luscious spider web that is retained until a response to the cue is triggered. In this sequence of events, the graphical annotations shift from anticipatory data, to cue giving, to cue receiving. This pattern repeats itself multiple times during the

video, and often several times for different groups of dancers in any one moment of the choreography. This repetition means that once this system has been deciphered, it becomes much easier to "read" the choreographic work.



Figure 45 (top left): Screenshot from *Cue Annotations* that shows the early stages of a cue from its origin with the cue giver (identified through the circular object annotation) and the spatial pathway of the cue. **Figure 46 (top right):** Screenshot that shows how cues are dispersed as spatial forms amongst multiple recipients. **Figure 47 (bottom left):** Screenshot that shows that the anticipatory cue has disappeared. **Figure 48 (bottom right):** Screenshot that shows the end stage of cue giving.

Graphical annotations offer a particular perspective on the work. This example of *Cue Annotations* gives the impression of a relay race, where the cue giver is active while the receiver waits in anticipation. This is misleading, as it positions the cue receiver as passive when, in fact, they must be active.

Verbal cues, such as "Freeze!", "Go!", "One, Two, Three", and "Sit!" appear as white block capital letters, translated from temporal forms to visual and spatial data (Figure 49, p. 167). As the visual dominates the viewing of *Synchronous Objects*, these cues are not initially at the forefront, making this grammatisation crucial if verbal cues are to be identified. Nevertheless, the spatialised cues are not immediately visible but are hidden behind the graphical annotations. This is perhaps difficult to comprehend when the cue is clearly visible in the bottom right of Figure 49, however, their appearance is momentary, and they occupy little space on screen. This is because the dance content

that these graphical annotations draw attention to is also fleeting; anchored to the video content, the annotations do only as much as is necessary.

Figure has been removed due to Copyright restrictions

Figure 49: Screenshot from *Cue Annotations* that shows a cue giver in the bottom right corner shouting "GO!". This verbal cue is concretised and stabilised as a spatial and temporal form.

It is through the repeated viewing of *Cue Annotations* that the graphical object annotations that illuminate the verbal cues in *One Flat Thing* start to become visible amidst the noise of the work. Crucially, once the viewer becomes aware of their presence, the annotations become forms of tertiary retention, integrating into the viewing experience. This means that verbal cues, as a detail of the choreographic work, are foregrounded, helping the viewer to make sense of how the dance is organised. This is the first step towards recognising the cues as audible data, not only in their grammatised form. Over time, the reliance on the graphical annotations lessens as the viewer becomes able to recognise the cues. This frees up the viewer's attention to hone in on other layers of the work.

In my study of *Cue Annotations*, it became apparent that the movement aspect of the cues that trigger a response in other dancers are not highlighted through graphical annotation. Thus, a hierarchy of dance content is established through the identification of certain kinds of cues over others. While the sequencing of cue giving and receiving is illuminated and verbal cues are spatialised, the decision not to grammatise movement cues means that there is little encouragement or motivation for the viewer to seek out these details. It is important to expose annotation in this way as a selective practice as it is neither possible, nor desirable, to draw attention to everything that is known or knowable in a given source. For example, the decision to annotate the movement component of cues would expand the visual system of representation and threaten to overwhelm an already complex source. This risks further occluding the dance content beneath the graphical annotation. The editorial nature of annotation means that there is a responsibility on behalf of the annotator(s) to how they re-author the video, as this re-authorship facilitates what can be collectively known about an artist's practice. Furthermore, it is crucial that viewers engage critically with sources and that they are aware that annotation offers one perspective of the work, but not the only possible reading.

Synchronous Objects: Process Catalog

The distortive effect of graphical annotations can be seen in the *Process Catalogs* for *Synchronous Objects*, which evidence experiments with graphical annotations to articulate the organisational data of *One Flat Thing*. These catalogs reveal the labour involved in developing the website publication. Zuniga Shaw alludes to the iterative and recursive nature of creating annotations, stating, "As we learned to read the dance we made better decisions about which alignments were most significant in relation to the others and would best help to elucidate the dance's structure" (in Forsythe and OSU 2009). According to Zuniga Shaw, "Deciding which alignments to mark was a painstaking process. Originally we marked hundreds more alignments than the ones you see in the final version" (in Forsythe and OSU 2009). The selective and editorial character of annotation is what makes the *Process Catalogs* an invaluable resource because the catalogs disclose how the form and placement of annotation (correlative to the dancer) impact what information is conveyed and thus interpreted by the viewer.

In *Process Catalog: Concept 3*, for example, white vertical pins track the dancers' use of the general dancing space and emit burgundy, yellow, and grey lines towards the ceiling (Figure 50). The graphical annotations, which are inspired by video games (Twohig in Forsythe and OSU 2009), influence the representation of space. Firstly, the annotations give the impression that the dancers' movement is controlled by an external force or a higher being, as their energy is harnessed from above. Secondly, the annotations embody an understanding that, just like old-school Nintendo games such



Figure 50: Process Catalog: Concept 3.

as Super Mario, the dancers are only permitted to move side to side. While the dancers are, in fact,

moving sideways, the annotations make it appear that this is the only spatial possibility. The style of the annotations flattens the representation of space.

The aesthetic of the annotations in *Concept 3* leads them to become the focal point in the video, detracting from the dancer and the choreographic work and directing attention towards the top left of the screen. This is a case whereby, even with repetition, the viewer may not be able to overcome the coercive nature of the annotations: they are too alluring, or distracting. However, if the viewer is able to focus not only on the annotations but how they relate to the dancer, they will become aware that the annotations draw attention to the verticality of the dancers' bodies and, more specifically of the head. This is a movement detail that I had not been made aware of during my study of either *Improvisation Technologies* or *Synchronous Objects* and shows how annotation can offer a particular perspective of a video excerpt.

The annotations in *Concept 5* highlight movement details that are not observable in the unmarked video. Malleable white graphical lines layered over the dancers create a stick-figure formation that draws attention to body design (Figure 51). The annotations are not particularly striking as their colour is too similar to the set design of the work, but it is their elasticated quality that is of interest. The annotations give the impression of stored energy and colour the movement with a buoyancy that is undetected in other video excerpts. In this instance, it is unclear whether the annotations intentionally disclose information about the performance quality of One Flat



Figure 51: Process Catalog: Concept 5

Thing and, therefore, reveal a hidden quality about the work, or whether they contribute something that was not there to start with.

Text Annotations

The discussion now shifts from graphical annotations to the text-based annotations that feature in *Performer Insights* in *Using the Sky*. Linked annotation is used to tie together the different materials which include video recordings (visual data), score instructions (digital marginalia), performer insights

(digital marginalia), and the floor plan (analytic data).¹²³ Unlike graphical annotations, linked annotations are hidden from the viewer and do not interfere with the aesthetic viewing or interpretation of the video footage. Instead, these annotations reveal themselves through their organisational properties and how they enable the viewer to navigate the aforementioned materials. Selecting one section of *Performer Insights* causes the other linked materials to automatically realign. It is important to note, however, that the video is the dominant source of information and must be playing for the materials to accurately align.¹²⁴ This level of organisation helps the viewer to easily navigate back and forth between different sections and materials of and, importantly, means that materials align to maintain their temporal association to the video content.

The linked annotations were created by Jenett using PM2. The written score for *Using the Sky*, which is visible to the viewer as digital marginalia and will be discussed in more detail shortly, provided Jenett with a structure from which the different sections for the dance could be identified. This formed the data for the linked annotations. In addition, Jenett used the terminology developed between Hay and the dancers, which was corroborated in interviews, in the annotation process (Jenett 2015: 25). Jenett characterises the analysis of video footage using the information from the score and choreographic terminology as an iterative process of tagging. He reports that it resulted in too many ill-labelled markers in the beginning, but gradually the annotations became more refined (Appendix B: 284). The annotation process took Jenett a year, and he reflects that it took a while to get to a place where he reached an understanding of how Hay speaks about her practice (Appendix B). By the end of the process, Jenett was able to "develop something like a feeling for movement within the video" where he "could predict what they [the dancers] would do" (Appendix B: 283). That this process took so long is not unsurprising nor unexpected. It indicates the challenge of articulating and transmitting the specificity of choreographic practice with clarity and sensitivity.

Performer Insights focuses on two dancers, Durning on the left half of the page and Warby on the right. The page, which is one of seven in *Using the Sky*, is comprised of different cells of materials

¹²³ Linked annotations are different to *linked data*, which lies at the heart of the Semantic Web. According to WC3, to make the Semantic Web "a reality, it is important to have the huge amount of data on the Web available in a standard format, reachable and manageable by Semantic Web tools. Furthermore, not only does the Semantic Web need access to data, but *relationships among data* should be made available, too, to create a *Web* of Data (as opposed to a sheer collection of datasets). This collection of interrelated datasets on the Web can also be referred to as Linked Data." (2015 [emphasis in original]

¹²⁴ In the early stages of analysing *Performer Insights*, I spent several confused weeks attempting to make sense of how the materials were aligned before recognising that it was important that the video is playing. *Performer Insights* focuses on two of three performers, and during navigation the movement pathway section aligns according to video footage that was played most recently.

(Figure 52). Two videos of the dance are sandwiched between other analytic materials: the text to the left contains Hay's score instructions, and the text to the right provides the dancer's commentary. In the bottom right, just off centre, is a cell containing the dancer's movement pathway, referred to by Motion Bank as *Movement Character*. Together, these materials construct an interpretive lens through which to view and make sense of the dance. I will now focus on the dancers' commentary, which offers a perspective that is difficult to arrive at through the analysis of the video, score, and movement pathway alone. The commentary contains interpretations of the score instructions, the dancers' decision-making process, reflections on what they were thinking about as they move, their subjective experience of time, and the difficulty of working with particular ideas. There is no thematic ordering or coding of this information, nor inclusion criteria, meaning that the contents of this commentary for each dancer and for each stage of the score are different.



Figure 52: Screenshot of *Performer Insights* in *Using the* Sky. Materials relating to Durning's version of *No Time to Fly* can be seen in this screenshot. Hay's instructions are to the left of the video, the performer's insights to the right of the video, and the dancer's floor plan is bottom right off centre. Image reproduced with kind permission of Motion Bank.

A comparison of Durning's and Warby's insights exposes different responses to the score instructions. The instruction for Section 11 of the score is, as follows: I sing a **wordless song** that arises from and combines joy and sorrow into a single melody that resonates through my bones. Barely suppressing a sense of personal history, my face reflects the transience of joy and sorrow.

The song's duration is determined by how much time is required for the song to impress itself on my body and the audience's memory. Its phrasing can expand and contract.

I attach rhythmic movement to the song, my dancing obviously influenced by my singing. I establish this continuity of relationship before using it to navigate a slightly complex path to the edge of the stage.

Partway, my audible singing disappears, yet the dancing adheres to its reliance on the now unheard rhythm of the song. (Hay and Motion Bank 2013 [emphasis in original])

During and Warby both reflect on how they approach the instruction. This is Durning's account:

I first of all try not to determine when I choose when for **the song** is the right time. I try to open my mouth and just go. Because when I've experienced it as 'oh, this is the right time for the song now', it usually never works well that way. So I try to let the body determine when I start singing.

Where I find it's mostly a break is going into the movement. That's a little bit of a tricky place for me, attaching rhythmic movement to the song. And I think I have an image of what that movement should be, and I always try to scramble that up. (Hay and Motion Bank 2013 [emphasis in original])

Warby notes:

I'm trying to let it come out of nowhere, just come out of the body, the whole body at once. If I, for an instant, think about the **song** I'm in trouble. I just take it as it comes and follow the curve of the song. Follow the curve of the song until it forms itself. The first attempts I have at something like that are often superficial and feel fake, or feel like I'm trying to do something. And over time, that shifts into doing less and understanding how to do it through practising doing it. The practise of the dance day after day, is the key to eliminating the organisation, or thinking, or concreteness of how you think you want to do this thing. (and Motion Bank 2013 [emphasis in original])

Durning and Warby both identify an ongoing commitment to finding spontaneity in the face of a premeditated instruction. Their reflections arise from experience and signify a response that is never complete but continues to evolve with each iteration. What feels particularly valuable about these insights is that they invite the viewer to look at the dance in a different way by providing a framework for interpretation. In my initial viewings of this section, for example, I had not interpreted Durning's song as wordless, as per the score instructions, but a song in a foreign tongue, perhaps Irish or Gaelic. I was satisfied with this interpretation until I viewed the video with explicit reference to the score instructions and performers insight.

The instruction for section six of *No Time to Fly* is:

I appear at the edge of the stage as the last few audience members take their seats. My behavior is matter-of-fact. I have a lot of choices to make in advance of my entrance. I decide on my entrance site and the direction I will travel in relation to the audience, plus where that path will end. Then the light fades. (Hay and Motion Bank 2013)

For the dancer, this provides a point of focus, a mindset, from which to depart. Durning's commentary

in response to this instruction reads:

I really try to attend to seeing the curve in the space, on the floor or in the space itself, rather than just starting and then finding the curve as I'm doing it. (Hay and Motion Bank 2013)

And Warby reflects:

When I'm standing at the edge of the space, I'm not necessarily picking the exact place I'm going to end up, but there's definitely a spatial sweep that I'm absorbing while standing there, and once I've stepped on to that curve it finds itself as I go. (Hay and Motion Bank 2013)

The dancers' commentary reveals a similarity in their thinking at this point in the dance. Section six does not specify the spatial pathway the dancers should take, yet both dancers reference a curved design. This brings forth an understanding that the dancers are not only focused on this instruction but are also in anticipation of the following instruction, which is:

The moment the light returns I step onto the stage, walking in a stride and style not mine, as foreign as a foreign accent, recognizable but odd. The path is **a singular broad curve** that ends in a slightly accelerated little curl, leaving me facing the portal through which I stepped onto the stage. (Hay and Motion Bank 2013 [emphasis in original])

Durning's and Warby's insights suggest that their thought process is not isolated to each score instruction but blurs across them. This was observed by Jenett, who acknowledges that the start and end of each score instruction, and how the dancers transition between different sections, is not so easily determined through video analysis alone. Jenett reflects,

Because the thinking process, the planning, the getting into [the instruction] happens already, before it actually becomes visible, and that depends on how long before... or sometimes they [the dancers] would look for the moment that would allow them to go onto the next part, or something like that. So, it's not very simple and that's something that you cannot see easily from outside, so you can see once it manifests in the body, but you cannot look into their brains, obviously. (Appendix B: 285)

Video annotation combined with interview data made it possible for Jenett to discover that the dancers' preparations for transitioning between sections of the score often happens long before change can be perceived in the video (Appendix B: 285). He found that he was able to identify subtle qualitative details, such as "a shift in energy or a shift in the tension that you can feel from the

performer when you closely look at it, the video" (Appendix B: 283). Nevertheless, Jenett explains that a compromise between the subjective and embodied experience of the dancers and the objective perspective gained from his analysis was necessary in determining the final annotations. Because Jenett's insight was only available following a process of in-depth study, no-one would reach this understanding without also conducting such a study. A compromise was, therefore, considered important to create a relationship between the video and analytic materials that makes sense for the viewer and provides an understandable entry point into viewing the dance (Jenett Appendix B: 283). This suggests a tension between the embodied knowledge of the dancer and what information may be captured through observation and gives prominence to how crucial the dancers' input is. But it also exposes a distortion in how insights are presented.

The discovery that sections of the work blurred into one another was particularly important in terms of how I was engaging with *Using the Sky*. My impression of the materials was one of fragmentation, and I was not compelled to engage with videos in *Using to Sky* as a whole work, from start to finish. In the early stages of my analysis, there were many occasions when I was viewing the video through the lens of an instruction or insight from a particular section of the dance but unaware that the dance had moved on and the analytic materials had realigned. This meant that I was often framing my interpretation of a particular section of the dance according to instructions that applied to an earlier section of the dance I was watching. With time, I became aware of the transitions between sections by noticing the change in marginalia in the periphery of my vision, however, this resulted in a distracted kind of viewing. It resulted in a mode of attention in which I was continuously checking that I was viewing the dance through the correct interpretative information. Consequently, I found it advantageous to study individual sections at a time. Yet this created fragmentation of a different kind, one where the sections of the dance blurred, but I was not permitting this in how I was viewing the dance.

The digital marginalia in *Using the Sky* are not created directly on top of the video content, as is the case for graphical annotations, but sit alongside the video. This lack of instant spatial contextualisation between the annotation and video stream results in a less integrated viewing experience than for *Improvisation Technologies, Material for the Spine*, and *Synchronous Objects*. I propose that the experience of engaging with digital marginalia is comparable to reading the footnotes in a print document: having the score instructions and performers' insights located separately to the video content meant my attention was constantly shifting between the video and the digital marginalia, and I was never able to fully commit to either. It became necessary to alternate between different types

of viewing: the watching of video and the reading of text materials, which was challenging and required a lot of effort and commitment.

To enable the digital marginalia to truly inform my understanding of the dance, I relied heavily on the Coding Sheets (see Chapter Three: 74-75 and 83-85) in a way that was not necessary when studying *Improvisation Technologies, Material for the Spine,* and *Synchronous Objects*. As there was no immediate spatial contextualisation between the annotation and the video content that would support my interpretation and analysis, the Coding Sheets were important tools for recording my insights and observations about the dance. I was able to develop a systematic approach to watching the video through the lens of the digital marginalia without having to consult both kinds of information at the same time. It took time and intensive study before content of the digital marginalia became integrated into my viewing experience and this was aided by writing on the Coding Sheet the information that I would use to look at the dance: In effect, my own grammatisation process helped me to accumulate understanding of the work.

To take advantage of all of the information on offer, *Using the Sky* demands a curious reader with time to explore the website. With time and labour, it becomes possible to rely less on my Coding Sheets and the digital marginalia for interpretation and to see the work in full, but I was not able to reach this stage during my study. For greater ease of viewing through the interpretative lens constructed through the score instructions and performer insights, closer proximity between the digital marginalia and the video would be advantageous. This would make is possible to read the textual commentary with the video in a less distracting manner. For print materials, this would be the equivalent of reinstating footnotes as printed marginalia: the viewer would still have to do the interpretative work, but the task would be less effortful. *Using the Sky* has a wealth of information that feels far greater than that in *Improvisation Technologies, Material for the Spine,* and *Synchronous Objects*, and this can feel overwhelming for the viewer. Nevertheless, the labour demanded for engaging fully with the linked materials results in a deeper comprehension than is possible for graphical annotations alone.

Discussion

The discussion of multi-media publications in this chapter has addressed mark-up methods that include verbal and gestural embedded annotations, object and sequential graphical annotations, linked annotation, and digital marginalia. These methods of articulating ideas about dance serve different functions. My descriptive analysis reveals graphical annotations to have the greatest initial impact on viewing video materials, because of how they anchor viewing to provide an easy access to

details of the dance through their alluring and coercive properties. In contrast, digital marginalia demand far greater attention, because they require the viewer to engage with two kinds of information: the visual and the textual. Furthermore, there is a weaker spatial and temporal association between the video and the content of digital marginalia that contributes to the feeling of fragmented viewing. Linked annotations are, visually, the subtlest forms of annotation, because they do not directly impact the viewing experience or provide information for interpretation. In the example of *Using the Sky*, these annotations manufacture pathways that organise and connect materials in a way that can both support and challenge interpretation. For all kinds of annotation, the viewer must be curious, insightful, and see beyond initial readings of annotated video to access a truly meaningful understanding.

There is a correlation between the complexity of video content and ease of decoding the meaning and value of annotations. There is a clarity in the presentation of ideas in *Improvisation Technologies* and *Material for the Spine*, because individual movement tasks are introduced in a way that information can be gradually accumulated by the viewer to supports learning. The tasks are balanced with descriptive and analytic verbal and gestural annotations (embedded annotations) as well as graphical video annotations. *Improvisation Technologies* and *Material for the Spine* are tools for self-tuition. This provision is not unique to contemporary practices but echoes the twentieth century motivation for finding a universal method of movement notation that would allow dancers to learn their parts outside of formal rehearsals. Importantly, however, *Improvisation Technologies* and *Material for the Spine* are not prescriptive in the way that notation might be characterised but enable the student of these materials to take charge of their own learning experience through their curiosity. These publications provide the time and space for the viewer to study the movement principles in a way that makes their meaning clear, demonstrating what can be learned about Forsythe's and Paxton's practice.

Contemporary dance works often evolve through thinking and research that is distributed amongst different agents. The discussion of *Cue Annotations* in *Synchronous Objects* showed that no one person is responsible for knowing the work in its entirety (e.g. the movement content, the cues, imagery use etc.) and it is appropriate, therefore, that video annotation is a collective and collaborative undertaking. The choreographer, the dancer, the dramaturge, the lighting designer, the digital artist, the audience member, etc., each have different modes of engaging with and experiencing dance. The choreographer, for example, sees what others cannot through their experience of improvising, creating, sharing, and giving shape to their ideas (Preston-Dunlop 1981: 4). The dancer's

perspective materialises through physical thinking and their experiential understanding of movement (Preston-Dunlop 1981: 4). Yet, traditionally it is the choreographer's viewpoint that is privileged in dance documentation, and usually only that which can be easily grammatised. However, video annotation has the potential to approach the analysis of dance and movement practices from multiple perspectives because there are not predetermined conceptual and social limitations on what should be articulated.

deLahunta describes annotation "as a means for the articulation of ideas and concepts emerging from the landscape of the choreographer/ dancer's research field", that "draws things out into a new meaning space" (2014: 3, 1). I refer to this as an authoritative approach to annotation, which can be seen in Improvisation Technologies, Material for the Spine, Synchronous Objects, and Using the Sky. The approach is authoritative because the publications were developed closely with the choreographer and dancers who have first-hand knowledge of the movement and choreographic practice that the publications seek to elucidate. The analysis of the dance content is supported by detailed subjective accounts, conducted in accordance with the dance artist's research questions, lexicon, and rubric. This provides access to knowledge that is not instantly graspable or easily objectified. Improvisation Technologies, Material for the Spine, Synchronous Objects, and Using the Sky are all examples of enhanced critical curation that arise from an authoritative re-authoring of video materials. By this I mean, the video documentation of movement or choreographic practice are reauthored to create an authoritative critical reading to provide a way in for viewers of the material. This creates what Leach describes as "transactable or usable" forms of knowledge (2017: 148), and the artistic philosophies and practices theoretically become more accessible to viewers with diverse experiences in dance. This is because singular experiences (as arising from primary and secondary retentions) become tertiary forms through the mnemotechnical property of annotation, thereby making these experiences accessible to others.

Annotation is a process of grammatisation that stabilises the interpretative and editorial decisions of the research team as part of the video record. Subsequently, these decisions become part of collective knowledge of dance because of how they can be transmitted beyond the artistic team. The collaborative and interdisciplinary approach taken in the research and development of the multi-media publications at the heart of this chapter bring together different communities, methodologies, and knowledge-bases that are not all particular to dance. This means that the re-authoring of dance video materials emerges through a distributed and collective perspective, which allows for complexity,

ambiguity, and a multiplicity of viewpoints that might not otherwise be possible if undertaken by a dance-only team.

The editorial properties of video annotation indicate that those involved in contemporary movement practices are able to take control of the narratives that are transmitted. This is achieved by offering authoritative and re-authored accounts of video materials that provide the basis for interpretation. Leach (2017: 149) observes that "there is a high degree of control exercised by the choreographer over what is released to others [...] Thus what is made available is closed in certain ways" (2017: 149). Leach goes on to identify that

all those involved in making these [choreographic] objects [media publications] repeatedly used phrases such as how "brave" the choreographers were in revealing private process, about how they were making themselves "vulnerable", and being "generous" in what they were doing". (2017: 150)

The decision of what to include and what to draw attention to does not necessarily trigger the impression of bravery, rather sharing practice with audiences in an accessible way.

Forsythe's belief that dance is missing an intelligent kind of notation for the dancing body, one mediated by computers, led to him dissuading artists from publishing books and films of his work (OpenEndedGroup 1999). Three decades after notation advocates were arguing for the strength and superiority of Labanotation or BMN, Improvisation Technologies was published. I find this timing remarkable. First of all because notational aspirations moved beyond the challenge of representing time-based events on paper to embrace audio-visual recording technologies and their augmentation, and the interdisciplinary approach adopted for Improvisation Technologies suggests that the challenge of documenting dance became of interest to researchers outside of the dance community. Secondly, continuous media altered what might be taken as a unit of analysis. In Labanotation, for example, the motion of the body is divided and fragmented in order to translate it onto the page, yet a record of what the body does already exists (albeit differently) in the video record. The annotation of video enables something other than the analysis of the body in space and time and can be used to expose something about the thinking space of the dancer or choreographer. Finally, in the space of thirty years, ideas about dance and how it can be recorded developed to such an extent that intentions towards documenting individual practice rather than universal principles could be seen. While Forsythe was influenced by Laban's Choreutics, the viewer does not require prior knowledge of this twentieth century codified analytic framework in order to find meaning and value in Improvisation Technologies and Synchronous Objects. Instead, these publications show that descriptive and analytic annotative layers can offer a more accessible way of engaging with dance ideas and support how dance is seen and understood because of how details and ideas are foregrounded.

Paxton is reported to have initially resisted the documentation of his work through means other than writing, fearing that, "the medium (graphic or digital) would take over the physical," but he became excited about this approach, feeling that it elucidated his research about the abstract lines of motion (Andrien 2015). For Paxton, it seems that graphical annotations reveal details not otherwise communicable. He comments,

The fine-line energy illustrations are beautiful, a big leap from our first tries. They work much better without the body distracting from the geometry. Because MfS. [sic] is so based in geometry, these are very useful mental implants, but at the same time they are complex. I think they should be visually built for the viewer, to draw them in slowly in order that the final visuals can be better appreciated. (Paxton 2007 in Corin 2017: 39)

In this quotation, the gradual introduction of information is identified as beneficial for developing the viewer's analytic eye. It might be said that object annotations are authoritative and factual in nature, directing the viewer's attention, while sequential annotations are often guiding forms that encourage curiosity and a different kind of viewing.

Hay published the books *Lamb at the Altar: The Story of a Dance* (1994) and *My Body the Buddhist* (2000) in an effort to have her practice more accurately presented (Hay and Motion Bank 2015). Jenett explains that "we had no way of understanding the piece through any other method than annotation" (Appendix B: 284): it allows for common details of the 21 variations of the dance work to be identified, according to the score used in performance. The linked annotation divides the dance into sections that then enables the viewer to make comparisons between the interpretation of different performers, supported by digital marginalia. *Using the Sky* provides insight into *No Time to Fly* that originates with the practice and knowledge of the dancers. Importantly, however, *Using the Sky* was not intended to be a "beginners manual" and requires, to some extent, "the pre-trained eye, or mindset" (Jenett Appendix B: 308).

Improvisation Technologies, Material for the Spine, Synchronous Objects, and Using the Sky support the stabilisation,

legitimisation, and transmission of knowledge, making available the artistic practices and philosophies of Forsythe, Paxton, and Hay. Yet there is a clear dichotomy between the research possibilities of these established choreographers, who are attached to large scale interdisciplinary research projects, and the potential of lesser-known choreographers, or those making work on a smaller scale. The digital
tools are not yet widely available to self-publish high quality publications such as those analysed in this chapter. Moving forwards, in relation to the collective knowledge of dance, it will be necessary to consider whether the very act of choosing certain practices reinforces the canon of contemporary dance. Furthermore, it is likely that the cost and labour of such projects against the demographic of audiences using them and the frequency of use will need to be justified. I propose that the multimedia publications analysed in this chapter are valuable projects as they can transform the experience of viewers, as well as the collective knowledge of dance, but only if they are used enough.

The interdisciplinary approach taken in realising the four multi-media publications at the heart of this chapter is indicative of an ontogenetic methodology, a concept borrowed from Simondon.¹²⁵ This methodology is characterised by an approach whereby what can be understood about dance and movement practices is neither pre-determined or predefined, but co-constitutes itself in, with, and through the annotation process. In other words, the framework and parameters for analysis are not determined in advance, meaning that they can be developed in response to the thinking and ideas of the research team and in relation to the artistic practice. Subsequently, dance or movement practices are not presupposed as already known or completely knowable and video annotation allows for knowledge to emerge according to the interests and skillsets of the analytic team, it allows for metastability.

In reference to *Improvisation Technologies*, Steve Dixon suggests that graphical annotations offer "a welcome departure from the comparatively laborious and restrictive processes of Laban notation" (2007: 631), a statement which could also apply to the graphical annotations in *Material for the Spine* and *Synchronous Objects* which came later. Here it is unclear whether Dixon is referring to the labour involved in creating annotations or the viewer's labour of decoding their meaning and value. For both, I propose that the labour of video annotation (graphical and text-based) is comparative to that required in notation, although the skillset is different.

¹²⁵ Simondon argues that "we cannot, in the habitual sense of the term, *know individuation*; we can only individuate, individuating outside, and individuating within ourselves" (Combes 2013: 8). Ontogenesis, a replacement for ontology, takes a stance against the binaries of being and becoming, form and matter, which Simondon argues is flawed as it presumes the existence of the individual (Combes 2013). Simondon proposes to reconfigure the relationship between thinking and being, and to not presuppose that the individual is constituted in a particular way but as a relative reality: "it is not [...] a matter of defining the conditions of *possibility* and the limits of knowledge" (Combes 2018: 8, 7). I use the term ontogenesis more broadly to contemplate an approach to analysis and documentation that does not prescribe in advance what the outcome will be but is developed relative to the different skillsets and knowledge-bases involved in the process.

Hutchinson Guest estimates that "one minute of choreography requires eight hours of work" to create a Labanotation score which can be broken down into two hours of rehearsal and six hours of writing up notes outside of the rehearsal (1984: 125). By this estimate, a twenty-minute choreography would take 160 hours, or approximately a month of full-time work based on a 35-hour week. A direct comparison to the practice of video annotation is difficult, because notation and annotation are different practices, but also because there are few accounts that quantify the labour involved. However, Jenett estimates that it took a year to annotate the videos for *Using the Sky*. This involved annotating twenty-one versions of *No Time to Fly*, estimating just under two twenty-minute videos a month. Jenett's account of this process indicates that annotation is not simply a case of translating what is seen, but also articulating what is not seen. The labour of creating the actual annotations goes hand in hand with the effort invested in deciding the most appropriate way of articulating artistic practice.

A significant amount of labour was involved in crafting all four multi-media publications discussed in this chapter to ensure synchronicity between the analysis and the video content that would make sense for the artist and viewers alike. The *Process Catalogs* that accompany *Alignment Annotations* and *Cue Annotations* are particularly illuminating, as they detail a selection of experiments undertaken to create visually explicit diagrammatic representations of movement knowledge. As Zuniga Shaw explains, "As we learned to read the dance, we made better decisions about which alignments were most significant in relation to the others and would best help to elucidate the dance's structure" (in Forsythe and OSU 2009). Annotations are created through a lengthy and laborious recursive process of experimentation, and it seems that the biggest requirement to create a version of the work that satisfactorily articulates and transmits movement practice is the commitment to working with video materials in a repetitive and ongoing manner.

Dixon's assertion that Labanotation is a restrictive practice (2007: 631) holds some weight. Labanotation is accessible only to those with a specialist skillset, and the practice predetermines what knowledge is transmitted through the inclusion and exclusion criteria of prescribed analytic framework. In comparison, the annotator has more flexibility, providing, of course, that one has the tools to conduct the annotation or a collaborator with computational skills to support the visualisation of the analysis. This is not to say that annotators do not construct a lens through which they see dance: they base their analysis on what they understand about movement and what they attend to in viewing, which is based on their prior experience. Subsequently, annotators with different experience bring different perspectives into play that can be beneficial for seeing dance in new ways. This is because the diversity of retentions and protentions grows beyond what is specific to dance.

My preliminary assumption at the start of this research was that annotations, as an intentional communicative act, would be semantically explicit, making their meaning easily and immediately accessible. This, however, was not the case, and there is a great amount of labour involved in coming to a meaningful interpretation of annotation. One description in Chapter Two characterised marginalia as a "poor substitute for [intellectual] engagement" that does not suitably exercise the critical capacity of the mind (Brown and Considine 2012: 5-6). This has some truth in application to video annotation if one were to believe or assume that simply viewing an annotated source is sufficient for understanding. Rebecca Groves, former dramaturge for the Ballet Frankfurt, proposes that *Improvisation Technologies*,

provided audiences with a set of analytic skills to become better readers of dance performances. Furthermore, it created a legible graphical language and an accessible conceptual framework. (2007: 92)

I agree with Grove's assertion that the graphics create an accessible framework but propose that the analytic skills are less provided, but they may be developed through a commitment to active reading. *Improvisation Technologies* encourages viewers to see dance differently, because the graphical annotations become integrated into the experience of seeing as forms of tertiary retention. However, annotations only start to alter one's understanding when they cease to be tertiary retentions and become part of what an individual retains in their viewing.

My experience points out both that decoding the meaning and value of annotations is time consuming and that comprehensive understanding is limited without a commitment to close reading and analysis. The Coding Sheets that I used to document my analysis of the annotations in the multi-media publications at the heart of this chapter showed how understanding of the dance was accumulative. Furthermore, the Coding Sheets supported my ability to recall the results of my prior observations and analysis that were not yet embedded in my experience of seeing the dance work and loop them into future viewings of the work. I was not only engaging with the tertiary retentions of the analysis undertaken by the researchers for *Improvisation Technologies, Material for the Spine, Synchronous Objects*, and *Using the Sky*; I was also engaging with tertiary retentions that I had created.

deLahunta rightly suggests that understanding the significance of annotations is as much the responsibility of the viewer as it is for the creator of annotations. He writes,

As articulations of ideas coming from inside dance, they challenge the imagination of the reader to come to grips with their significance. It cannot be left only to the choreographer/dancer to resolve this intrinsic tension (responsibility to articulate this). To grasp and wrestle things from dance into the space of mutual interdisciplinary understanding will require the reader to work harder. (deLahunta 2014: 3)

The onus and responsibility for understanding is placed on the reader who must be curious and active in their viewing. This necessitates a mode of engagement that is more than simply watching the video, i.e. analytic viewing.

The path to understanding the meaning and value of annotations is a multi-staged process that transitions from contemplating annotations as isolated units towards recognising the dialogical encounter between the annotation and the video content. First the viewer becomes familiar with the content of the annotation (the appearance and dynamics for graphical annotations) which directs attention towards particular features of the dance. With time, it then becomes possible to read the annotation *with* the video content where the dialogical relationship between the two makes it possible to see annotation as a form of mark-up. Only then, does it become possible to view the work without an over-reliance on the annotation, when the meaning of the annotations is integrated into viewing. Through this process, annotations lessen their hold and their coercive effect can be minimised. Commitment and effort are required, and there are no shortcuts to getting at the information. The rigour of establishing this analytic perspective helps to structure an understanding of what annotation offers, which makes new discoveries possible.

The account of developing understanding invites contemplation of the motivation for viewing, and how likely the viewer will look for more information once they feel they come to a satisfactory interpretation. This is important, because misinterpretation can arise through an insufficient study of the annotations. My immediate assumption in analysing *Cue Annotations*, for example, was that the object annotations, which were later identified as the anticipatory data for cue giving, were designed to accentuate the dancers' kinesphere. This was based on the knowledge that Forsythe was inspired by Laban's Choreutics (retentions) and an expectation to see this in my analysis of the work (protentions). Subsequently, when encountering these annotations, I assumed that variations in size correlated to the volume of the dancers' body design. While this analysis is not unfounded, it took many more viewings before recognising the actual function of the object annotations. Had I been satisfied with my initial reading and not committed to exploring *Cue Annotations* more closely, then my interpretation would be limited by what I already knew, and my understanding would not have developed as a result of engaging with the work. This is an important observation and is significant for this study, because it shows that the only mechanism through which meaning can be checked is the viewer's own commitment to study.

The process of decoding annotations is uni-directional. This means that once interpreted, the annotation assimilates into the system of retentions and protentions that characterises what the individual expects to see in future viewings of dance. For the viewer, this lessens any overwhelming feelings about the speed and complexity of video content: the viewer becomes able to control and direct their attention, thus graphical annotations start to lose their dominance. From this account, it becomes useful to contemplate whether the interpretative support that annotations offer outweighs their intrusion in viewing dance. The meaning of annotation is characterised by the editorial and selective lens of the research team, who control the narrative of what is seen. While this provides a valuable entry point for the viewer, it also signifies a loss. This is because annotation controls what the viewer will ultimately understand about the work. Consequently, the viewer may rely on the annotations for interpretation, preventing them from looking towards the deeper layers of information to come to their own conclusions about the work.

Given the sophistication of how annotation operates, it would be a mistake to characterise it as simply a layer of information over, or attached to, the video source, since this conjures the impression of passivity or unresponsiveness. Rather, it is precisely the interplay and dialogical relationship between the annotation and the video content that allows annotation to operate as a form of mark up. Having described, analysed, and compared different kinds of annotation that feature as already existing forms, the next chapter focuses on the experience of creating video annotations. My experience, which arises from both the annotation of pre-recorded video content and the real-time annotation of the creative and rehearsal process of a choreographic work, is an important contribution to this thesis. For this primary research, I utilise two different annotation tools: one enables the multi-modal annotation of video (DancePro), the other is the same tool that was used to create the digital marginalia and linked annotations in *Using the Sky* (PM2). In the next chapter, I offer a reflection on what annotation is and how it functions, but also report on the experience of annotating video, the labour involved, and how understanding develops through the annotation process. Crucially, I draw from the findings in this chapter to come to some conclusion about what annotation offers dance scholarship more broadly.

CHAPTER SEVEN: CREATING VIDEO ANNOTATION

Video has become the go-to mode of documenting contemporary movement practices (Dance Heritage Coalition 2006: 11). It is a non-notational medium, meaning that it records dance but does not articulate details as notation claims to. Video captures an immediate time-based visual record that alters the temporal and spatial condition of dance to create a (more or less) stable record of an ephemeral medium. This stabilisation creates the possibility for sustained and prolonged study of dance which, I argue, can be augmented through the activity of annotation. This chapter presents the findings of primary research that examines the process of video annotation from a first-person perspective. I explore what kinds of information annotation draws attention, identify factors that informed the choices and decisions I made, highlight the labour of video annotation, and discuss personal strategies that I developed for efficient practice.

The discussion begins by introducing the two dance-specific annotation tools that have been selected for this study: DancePro and Piecemaker2 (PM2). These tools emerged as part of larger research projects characterised by having multiple interdisciplinary investigators embedded in scientific, scholarly, and artistic fields, and driven by generating meaning around certain practices of movement. As each tool offers something unique to its users, the intention is not to present a comparison of the tools (although their different analytic affordances are identified at various points in this chapter); rather, I reflect upon the experience of video annotation and how it informs the way that dance is seen, analysed, and understood. I first discuss the annotation of pre-recorded performance footage followed by the real-time annotation of the live teaching and rehearsal of a choreographic work. These two approaches result in particular ways of engaging with dance and my discussion unpacks how access, or exposure, to different kinds of information shapes the annotation process and, consequently, what is understood about dance. As there are currently no artists or researchers using DancePro on a regular basis,¹²⁶ and PM2 is "currently only being used internally by Motion Bank" (Motion Bank n.d.) and associate researchers, ¹²⁷ the findings of this study are an essential contribution to developing discourse concerning the value and impact of video annotation as an analytic tool for dance.

¹²⁶ DancePro is currently being developed by E-Space Education. See E-Space Education (n.d.).

¹²⁷ PM2 is currently used by the Pina Bausch Foundation and the Zurich University of the Arts, and each have different interfaces to suit their different needs. However, "the underlying software remains the same" (Motion Bank Institute 2016: 2). Suzan Tunca, an independent dance artist and researcher at ICK Amsterdam, is using PM2 for her research into the intuitive body (see ICK Dans Amsterdam n.d.).

Introducing the Tools

The developers of the digital sketchbook prototype Creation-Tool, an outcome of the Lisbon-based TKB project (see Chapter Two: 67-68) and the precursor to DancePro, reported that, "video annotators are becoming important in dance environments" (Cabral et al. 2012: 573). This was in response to the observation that,

Choreography and dance professionals are beginning to take advantage of the potential from the interactive digital media to develop new forms of mediation and new types of resources, making choreographic ideas more accessible. (Cabral et al. 2012: 573)

While it is true that some artists are exploring different forms of mediating and transmitting ideas, Cabal et al.'s assessment appears to be predominately driven by the academic research community. User-testing for the Creation-Tool revealed that two thirds of participants rated the tool as helpful and timesaving, and three quarters found it useful. However, only one third of participants found the Creation-Tool to be motivating, inspiring, efficient, and easy to use, while only 25% found it intuitive and effortless, and a mere 8.33% felt that it was an essential tool (Cabral et al. 2012: 578). This data was elicited from a small sample (eleven and twelve participants for different annotation functions) (Cabral et al. 2012: 576) and does not indicate an overwhelming need for video annotation. Generally speaking, there is little evidence to suggest a demand for video annotation tools from dance artists themselves, nor a desire to find a replacement for physical sketchbooks. Nevertheless, when introducing annotation tools, such as DancePro and PM2, artists appear positive about their potential. My study sheds light on what this potential is.

DancePro

In this study, DancePro is used to annotate a video of choreographer Ohad Naharin's *Deca Dance*. DancePro is a development of the Creation-Tool, an earlier prototype that was partly inspired by choreographer Rui Horta's observation that he amassed a large body of materials during creative processes but seldom watched the video footage that corresponded to the notes he made. A digital notebook was subsequently devised to combine video footage with a notebook space on the understanding that this could significantly contribute to and enhance the creative process (Cabral et al. 2011: 905 and Fernandes and Jürgens 2013: 115).

DancePro was developed as part of the Europeana Space Dance Pilot¹²⁸ for "researchers and dance experts (e.g. dance artists, choreographers) who need a set of much more powerful tools for accessing dance content and creating extensive metadata" (Europeana Space n.d.a). The tool is designed to enable the multi-modal annotation of pre-recorded and live video footage.¹²⁹ The key difference between the Creation-Tool and DancePro is the input technology. The Creation-Tool was designed for a Tablet PC and features bimanual touchscreen technology where the user's dominant hand controls a stylus in order to create annotations, while the non-preferred hand is free to switch between types of annotation and modes of visualisation (Cabral et al. 2011: 2295 and Cabral et al. 2012: 572). The input technology was thought to allow "more freedom in the creative process" (Cabral et al. 2011: 2294 and Cabral et al. 2012: 574) as it was assumed to be a more natural and familiar process than using a keyboard and mouse. DancePro is developed for MacBook Pro and does not have the same bimanual touchscreen technology: annotations are created using a trackpad or mouse. In my experience, DancePro does not feel intuitive to use. The annotations have an unrefined pixelated aesthetic reminiscent of Microsoft Paint c. 1985 that does not match the fluidity and skill of drawing with pencil or pen.

The video stream is in the centre of the DancePro interface, and the surrounding space acts as the blank canvas of a notebook (see Figure 53, p.188). Both spaces are available for annotation. Modes of annotation are selected from the vertical menu on the left, and include drawing, text, hypertext, and voice, and bookmark icons are selected from the menu at the top left of the interface. Beneath the video stream, there are two timelines. The first is for the navigation of the video file and includes the options for play, stop, and record. The timeline that sits beneath this is for navigating the annotations created and provides a visual representation of the length and frequency of different types used. Drawing on top of, or close to, the video footage creates a meaningful association between the video content and annotations, potentially minimising the inefficiency and redundancy in the collation of choreographic materials observed by Horta.

¹²⁸ The aim of Europeana Space was to "create new opportunities for employment and economic growth within the creative industries sector based on Europe's rich digital cultural resources" (Europeana Space n.d.b). ¹²⁹ Technical difficulties arose in the use of DancePro for this study. These are described in Appendix D.



Figure 53: Screenshot of the DancePro interface.

Regularities emerged in my use of annotation through trial and error, and refinements were made to avoid redundancy and duplications, and to efficiently articulate my observations. Initially, for example, it felt useful to colour-code annotations to distinguish between different information. Developing a system of representation required planning, because the colour of an annotation could only be determined before it was created and not altered after. Gradually, the importance of colour-coding diminished in favour of achieving the greatest contrast between the annotation and the aesthetic of the video stream. Furthermore, it became important to respond immediately and intuitively when new details transpired, without having to consider colour designation. This is not to say that colourcoding is not a valuable representational system (for example, this was useful in *Synchronous Objects*), but it requires time and preparation.

Refining annotation usage developed with my confidence and familiarity with DancePro. In the early stages of the study, when the purpose and motivation for annotation was unclear, I used bookmark icons to signify the appearance of performers on stage. This was quickly discarded, as I became aware that this information is easily visible in the video source. I used bookmark icons to identify the start and end of movement phrases performed in unison, until I realised that the number of annotations could be reduced by half in using a single icon, modified in length, to represent duration.

The possibility for multi-modal annotation in DancePro allows one to create a visual system of representation where different types of annotation can be assigned to certain kinds of information. For me, this choice was not conscious but evolved according to what was most appropriate for illuminating dance content. For example, I used text annotations only in the notebook space for descriptions or interpretations of the dance, I created drawn annotations (graphical annotations) on top of the video stream to highlight spatial content (including relationships between dancers), and I identified choreographic structure through bookmark icons that acted as 'tags.' In my study, a situation did not arise when voice annotation and hypertext felt necessary.

Piecemaker2 (PM2)

In this study, PM2 is used to annotate a video of Sasha Waltz's *The Rite of Spring*. PM2 is an online "unreleased in-development prototype" (Motion Bank n.d.) created by Motion Bank for the development of "on-line digital scores and as a standalone tool for use in the studio" (deLahunta 2017: 133). PM2 is a reprogrammed version of Piecemaker. Piecemaker was created by David Kern, to organise and retrieve the content of archived video materials (Kern and TanzKongress 2013).¹³⁰ It arose in response to the desire "to try to NOT lose any small detail" of the creative process (Ziegler 2017: 42 [emphasis in original]) and to "properly document the rehearsals and performances of choreographies that were evolving over time" (Ziegler 2007: 34). In Piecemaker, notes can be attached to points in the video "in a way it helps to keep the track [sic] of what happened combining points of views, inner and outer reports" (Kern and TanzKongress 2013). Kern's tool gave life to the PM2GO annotation tool that "was very specifically aimed towards recording within a studio" (Jenett Appendix B: 287). PM2GO was too limited for the needs of Motion Bank, which led to the development of PM2.¹³¹

The PM2 interface (Figure 54, p.190) is comprised of three sections: the video stream in the top left is the most prominent, a section for creating annotations sits underneath this, and completed annotations sit in a column on the right. PM2 is the same tool employed for *Using the Sky* (Hay and Motion Bank 2013), discussed in the previous chapter where I proposed that the annotations that feature in that study can be categorised as either digital marginalia or linked annotation. Using PM2 in this study, a uni-directional pathway is created from the annotation to the corresponding point in the video, but the pathway from the video back to the annotation is not created. This means that it is

¹³⁰ For an introduction to Piecemaker, see Kern (2014).

¹³¹ For a detailed explanation of this, see Appendix B.

not possible to select a moment of the video and jump to corresponding annotations (as is the case in *Using the Sky*).



Figure 54: Screenshot of the PM2 interface. Usually the video can be seen in full, but the page has been scrolled up to reveal the annotation classifications in the drop-down menu on the left.

Pre-programmed PM2 descriptors (comment, marker, note, scene, and data) can be used to classify the content and function of annotations. These descriptors, which are selected from the drop-down menu visible at the bottom left of Figure 54, are represented in the completed annotation by a small icon to the left of the timestamp. The descriptors have no immediate value in how the annotations appear or are organised in the PM2 interface. Jenett explains that the descriptors have no real meaning and are "more or less random," devised initially for a test audience annotating a live choreographic work (*Using the Sky*) according to specific tasks (Appendix B: 291). Motion Bank had intended to expand on these descriptors and make them "more meaningful so they could fulfil other purposes" (Jenett Appendix B: 292), but this had not been developed at the time of this study.

I discovered that the PM2 annotation descriptors became valuable when working with the PBA timeline, a feature of the prototype interface for the Pina Bausch Foundation (Figure 55, p. 191). The PBA timeline only appeared in the tool midway through my annotation study and was not a fully functioning feature of PM2. Figure 55 shows how annotations are assigned visual value in the PBA timeline through their colour-coding and spatial positioning in the timeline, as determined by the descriptor classification. I find this to be a particularly valuable mode of representing annotations,

because it allows for a more intuitive differentiation between different kinds of information than is possible when using the standard PM2 interface. Nevertheless, the PBA timeline does not present digital marginalia as accessibly as in the PM2 interface.



Figure 55: Screenshot of the interface for the Pina Bausch Foundation, where annotations are assigned visual value through colour-coding and the spatial positioning of annotations in the timeline. Image reproduced with kind permission of Motion Bank.

A modified version of PM2 was used for the real-time annotation of choreographer Alison Curtis-Jones's live teaching and rehearsal of *Drumstick* (2015). This was because, at the time of my study, the ability to film and annotate simultaneously in real-time was possible only on specially configured Motion Bank computers (Jenett 2017), to which I did not have access. The modified version of PM2 functioned like a social media chat window, enabling observations to be easily entered by typing and then hitting the return key. The 'chat window' was linked to an audio-visual (AV) recorder and an external webcam, and these are synchronised in the post-processing of data in the PM2 interface.

Early Stages of Annotating Pre-Recorded Video Footage—Notebook Observations

In my study, the early sessions of the annotation process were dedicated to watching the videos of the choreographic work for the purpose of familiarisation. This was an important stage and helped me to contemplate the motivation for annotation. In my experience, the intention of a mnemotechnic such as Labanotation is to translate the dance to enable its preservation, analysis, and reconstruction. The outcome in Labanotation is explicit, and the analytic process is characterised by prescribed frameworks. When it comes to video annotation, however, a representation of the dance already

exists in the video, so the analytic activity must be driven by something other than translation. As I watched the videos, I decided on tasks or ideas that would drive the annotation process which was key, because I did not have access to the creative process or the choreographic intention for the works that I was studying; I had only my own interests to guide me. Furthermore, without the intention to share the results of analysis with others, as was the intention for the multi-media publications discussed in the previous chapter, I contemplated what purpose and function the annotations would serve. Watching the videos as part of the early sessions of the annotation process brought these questions in focus.

As I watched the videos, I recorded what I observed on paper in the first few viewings (see Figures 56-59). The information was ordered chronologically according to the sequence of events in each dance to create a structure that would allow observations arising from later viewings to fill gaps in the record. This accumulative process can be seen in the use of different coloured ink representing two different sessions. The recorded information included floor plans that detail the dancers' use of the general space,¹³² written descriptions about the performance style and choreographic structure, and gestures and actions recorded in an idiosyncratic Labanotation shorthand. Written descriptions included the use of Western dance techniques vocabularies (taxonomies) that I have been exposed to in my contemporary dance training and career (e.g. jeté or arabesque) as well informal descriptions of movements. I made no attempt to record details of motion, such as transferences of weight and lability which cannot be easily captured on the page, instead noting isolated actions and body designs. In analysing these observations, I noted that details were omitted that required in-depth study, description beyond a few words, or those for which I did not already possess the terminology. These omissions were because these written records served the temporary function of capturing preliminary understandings that would create a framework upon which a more in-depth analysis of the work would be structured. Subsequently, the observations (in Figure 56-59, pp. 193-194) represent only a snapshot of what was actually seen at a particular stage in the analytic process, indicating details that were explicit to me in viewing and which could be easily recorded.

¹³² The general dancing space is differentiated from the personal space of the dancer (the kinesphere). It refers to space in the room that the dancer moves in.



Figure 56 (above): Page one of the initial observations of Naharin's *Deca Dance*. Figure 57 (below): Page two of initial observations of Naharin's *Deca Dance*.

Women 2 lines (6 women). Accomulation Much Never - seens shown because at the speed of male () "Decai" Men other all side Men shart the #5 while wow adorce. Buels of indubalance. Accomulation



Figure 58 (above): Page one of initial observations of Waltz's *The Rite of Spring*. Figure 59 (below): Page two of initial observations of Waltz's *The Rite of Spring*.

Break of into solo

Male dones lifted

The Labanotation symbols used in the paper-based observations are likely to be recognisable to readers versed in the system. Taken out of the context of a linear score, however, they form part of a shorthand system particular to my own practice and understanding. These symbols act as a key for deeper understanding and, used here, embody an element of subjectivity. They are mnemotechnical markings that help to recover a minimal degree of information, creating shortcuts to what has been identified in the work. This idiosyncratic approach signifies that this early stage of the study was an inherently personal process that does not intend, nor need to, be understandable or legible to others.

Annotating Pre-Recorded Video Footage

Once annotation began, it felt necessary to divide the video into smaller, more manageable units. This provided a starting point for analysis and an opportunity to focus on smaller excerpts of movement. An annotation scaffolding was constructed using details relating to choreographic structure, which included the start and end of movement phrases and the appearance of different groups of dancers. Initially, this scaffolding was constructed through tagging, meaning that not much consideration was given to the content of the annotation: they formed markers, or tags, that located specific moments in time. With repeated viewings, and as more information was built into the scaffolding, these tags were adjusted and refined for accuracy.

DancePro tags were created using bookmark icons.¹³³ Users can select stock icons (those already available in DancePro) or import their own images. Icons land in an on-screen location predetermined by DancePro but can be re-located. Different icons can be used to represent different kinds of information, developing a visual system of representation, and the meaning of each icon can be formalised by attaching a name (metadata) to it. I found this naming to be important to enable the meaning and value of the different icons to be easily recalled at a later time; naming creates a cognitive pathway, a shortcut of sorts. Nevertheless, naming the icon functions like a knot in a handkerchief and meaning may be inaccessible without explicit or first-hand knowledge of what the icons represent. Many of the DancePro structural tags were temporary, useful only in the early stages of annotation to narrow attention and focus.

¹³³ Icons are described as a useful tool to flag moments of video when the annotator does not have time to make extensive or detailed annotations (Cabral et al. 2011: 2296), however, in reality they work less efficiently in real-time.

Annotating video in DancePro is a process of 'thick-layering', and on a single video frame, multiple annotations represent different kinds of information.¹³⁴ Where annotations of the same type are attached to the single point in the video, or overlap in time, they are stored on top of each other in the annotation timeline. Consequently, observations in the early stages of annotation using DancePro became hidden under more recent annotations. Because annotations can only be edited in the timeline, it quickly became apparent that to modify deeper layers of annotation, the more recent layers had to be moved or deleted. Paradoxically, refining earlier annotations meant that the precision of later annotations was lost; or, if the information was deleted, the information itself lost all together. Either way, I discovered that annotating using DancePro is a looping process of creating and deleting. Given that DancePro is marketed as a digital sketchbook, this is an interesting observation. While DancePro offers a way of working with video, it does not always leave an audit trail of developments in thoughts, ideas, and observations in the same way as a physical notebook does.

It felt useful, or even necessary, at times to deviate from the systematic use of annotation honed in my study, i.e. to avoid too many layers of a single kind of annotation. However, there were consequences to the tactical or logistical deviation from usual practice when it came to recognising the meaning of makeshift annotations. I discovered that the benefits of replicating the function of one kind of



Figure 60: A screenshot of DancePro that shows the use of drawn annotation (blue cross top right) to replace the form and function of an icon.

annotation by using a different form were short-lived, an example of which arose in the preparatory study. In lieu of structural tags, I drew a large blue cross in the top right corner of the video stream (Figure 60). The shape, chosen at random, was initially successful, but in later sessions it was difficult to recall the meaning of this makeshift icon. Because the blue cross existed outside of the representational system that I had established in using icons as tags, it had not yet become integrated into how I watched the video (i.e. not part of my retentional and protentional framework for viewing dance). I attribute this partly to the fact that the annotation had not been formalised through the indexical function of naming, which would have concretised the annotated information and provided a key to unlock or decode its meaning. While the blue cross served as a mnemonic aid, being unable

¹³⁴ I use the term *thick-layering* to refer to the recursive and iterative process of video augmentation through annotation. This is related to Clifford Geertz's (1973) idea of 'thick description'. The term *thick mapping* might also be used.

to recall its meaning meant that it could not become integrated into my viewing experience. While there might be a depth of information behind a given annotation, this information is accessible only for those with the key to unlock its content. To function successfully, it seems that some annotations require additional signposting.



Figure 61: A visual representation of the personal experience of the non-linear process of using PM2, and the hypertextual quality of developing through the process of annotation.

The PM2 structural scaffolding was created using words as tags which have a different visual and spatial relationship to the video content than is the case for DancePro annotations. PM2 tags are stored in a column adjacent to the video stream rather than on top of the video. Furthermore, PM2 annotations are not abstractly representative in the way that DancePro annotations (icons and graphical annotations) are because they translate observations and insights into the written word.

The content of the PM2 tags could be easily retrieved and edited, because the annotations are ordered chronologically according to their relationship to the video content in a column adjacent to the video stream. Unlike DancePro, PM2 structural tags became incorporated into an increasingly expansive framework of observations which became more specific and sophisticated over time. My experience of this is represented in Figure 61,¹³⁵ a drawing that replicates the PM2 interface with the video stream

¹³⁵ This was drawn during my interview with Jenett.

in the top left corner and the list of annotations on the right side. The accumulation of detailed annotations is represented in the bottom third of the drawing, which is comprised of three columns, each signifying a detail of the dance work. In the first of these columns, the top box contains the description "general title" and represents the first annotation created of a particular detail or observation, after which the boxes become increasingly smaller to represent the honing in on more specific details of the dance. Early annotations are more generic in content and additional layers of specificity are gradually accumulated on top while existing annotations are modified for accuracy and precision.

A heightened perception arises through the iterative and recursive process of creating and viewing annotations and indicates that video annotation can be described as a tool for thinking. This thinking evolves in dialogue with the source that is studied. I propose, therefore, that annotation is a dialogical mnemotechnical activity. During video annotation, the annotator's understanding develops through greater familiarity and improved clarity in seeing. Through annotation, the path towards comprehension is asynchronous, fragmented, and accumulative, and this is characteristic of both the annotation process and how understanding is constructed. The annotation scaffolding created by icons (in DancePro) or tags (in PM2) compartmentalises the activity of viewing and this is an essential stage in building layers of descriptive, observational, and analytic insight that helps the viewer to deconstruct the different kinds of information contained in the work.

Working with Video

The difference between the representation of space in filmed dance work and the spatial reality of the dancer's movement arises often in discussions about dance documentation (Benesh and Benesh 1977: 120-125, Dance Heritage Coalition 2006: 11-14, Hutchinson Guest 1984: 8-11, and Preston-Dunlop 1981: 3-23). The camera has an inevitable influence on what is recorded and then viewed, and therefore, in how dance is transmitted. The camera angles and editing choices of video footage are not always conducive to analysis, and they impact what information is available for viewing and for annotation. For the annotation of pre-recorded footage, the viewer can only work with what is available to them in the video record, however accurate it is thought to be.¹³⁶

¹³⁶ The discussion of the distortion and corrective re-authoring of space suggests that adopting particular angles, or even multiple angles, in filming would be beneficial. Jenett explains "I think at the computational level we're pretty close to being able to sync that into a 3D perspective of things so that you can take in multiple angles and understand what happens three-dimensionally" (Appendix B: 300).



Figure 62: Exaggerating the spatial pathway of a dancer through annotation in DancePro.

I found that the spatial distortion of video became particularly acute when using graphical annotations in DancePro to highlight spatial concepts of the work. In one scene of *Deca Dance*, for example, a dancer walks from upstage centre to downstage centre to join a trio. The graphical annotation that draws attention to this pathway (Figure 62) indicates more of a sideways pathway, distorting what is represented

in the video. While the annotation matches what is seen to be happening, because the depth of the pathway is flattened the annotation feels like an inaccurate portrayal of what I understand to be happening from inference—in other words, from deriving a logical conclusion from what I assume be true based on prior experience. It would be possible to exaggerate the dancers' spatial pathway as a case of corrective re-authoring in order to re-insert the spatial reality lost in the video, however, this would not match the information visible in the video. This example identifies that video has a distorting effect in how dance is represented, which annotation could rectify by deviating from the filmed presentation of information.

Video edits play an important role in shaping to what the viewer attends. Close-up camera shots foreground choreographic details in a way that can be advantageous for detailed study, however, they can also occlude or hide aspects of the work. The video of *Deca Dance* I was working with did not occlude details of the work in a way that disadvantaged viewing because, in close-up shots, the movement of the ensemble off camera could be inferred because of the choreographic structure. Many of the sections in *Deca Dance* are built accumulatively, meaning that, through my analysis, the structure appeared formulaic and predictable, which made movement details relatively easy to identify. Consequently, for some sections, it felt unnecessary to watch phrases or sections in full, and it was even possible to look away from the recording without impacting comprehension. In hindsight, however, this ultimately impacted the depth of understanding I achieved because of the lack of repetition in viewing.

The video of *The Rite of Spring* I was working with, in comparison, features little repetition and there are rapid successive shifts in camera angles between close-up and long-shot perspectives which allow

for a range of details of the work to be seen and did not feel disruptive in initial viewings. Unlike Deca Dance where sections of the choreography did not need to be studied in full to develop an understanding of movement content and choreographic structure, the lack of repetition in The Rite of Spring meant that I was required to study the movement excerpt in full to understand what was happening. Furthermore, the non-linearity in viewing caused by the editing choices created an asynchronous structure that was challenging for annotation. As the annotation process developed and my analysis became more fine-tuned, it became necessary to find ways of negotiating the frequent shifts in camera angle. Based on the information available in the video, I explored two different approaches. In the first approach, I annotated only the events that were visible in a single camera shot, which generated a lot of annotations about discrete events that felt almost as though they were isolated from the rest of the choreography. This feeling of fragmentation was heightened by quick successive changes in camera angles. The second approach to negotiating camera angles treated the work as one continuous event, effectively ignoring frequent changes. Subsequently, annotations were based on choreographic structure rather than the edited structure, resulting in fewer and longer annotations and often relied on what I understood to be happening in the dance based on inference. The two approaches bring forth an interesting tension between annotating what is seen to be happening and what is thought to be happening based on prior experience and invites consideration of whether annotation is undermined or complicated by what is visible or not visible in the dance. Because of the camera edits in *The Rite of Spring*, I found that it was difficult to map the choreography as a whole, and it required a far greater degree of attention and repeated viewings to develop comprehension than was the case for Deca Dance. Nevertheless, the additional work resulted in a deeper level of understanding than what was achieved for Deca Dance.

The Spatial and Temporal Contextual Properties of Annotation (DancePro)

The DancePro interface features a generous notebook space that could be compared to the margins of a book. It is a space that can be used to write or draw in and to record information in a way that can help to extend understanding of video content. I found that annotations created on top of the video stream most often related to the spatial content of movement, while annotations created in the notebook space were usually text-based and referred to more general details, such as choreographic structure. These notes retain their context through their spatial and temporal relationship to the video source, meaning that they can be classified as a form of *digital marginalia*.

As described in Chapter Two, the spatial positioning of marginalia supports interpretation. The screenshots overleaf, which were selected at random, reveal a trend in the proximity between the

text and the video stream. In my study, marginalia never trespassed into the video footage and figures 63–66 show marginalia created as close to the corresponding video detail as possible. In these examples, the exception is the annotation in the top right of Figure 64 that says, "scene six," and which acts as a chapter heading, an organisational annotation that is distant from other annotative content. In these examples, the annotations are created in the margin on the right, primarily because I am right-handed, and this is my go-to side for making notes of any kind.¹³⁷



Figure 63: (top left), Figure 64 (top right), Figure 65 (bottom left), and Figure 66 (bottom right): Screenshots that reveal a trend in the placement of video marginalia.

The temporal and spatial relationships between the video footage and annotations generate meaning, particularly for graphical annotations. I argue, however, that spatial proximity can also indicate the annotator's relationship to the source and their familiarity with it, a concept that was introduced in Chapter Two (see p. 41-43). I propose that the more familiar one is with the video content, the greater their ability to contribute insights that do not rely solely on the source. In other words, they have greater autonomy in annotation. As I did not have an in-depth understanding of the choreographic work prior to annotation, my annotations related closely to the mechanical details of the moving body as I felt unable gain a sense of autonomy from the dance. This is not, however, a negative observation. Active reading is intrinsic to the annotation process, and close and deep attention develops understanding of the source and, with time, more independence can be achieved.

¹³⁷ While beyond the scope of my research, it would be interesting to examine whether creating notes to the right of the video footage also arise because of the conventions of reading English from right to left.

Through the close study of video footage, I was able to attend to the subtlest of movement details, and that created a particular insight into a dance that I have not before realised when using notation. This is because in notation, the focus is on what the choreographer asks for and on coming to a consensus in the initiation and manifestation of movement material for the purposes of translation, meaning that dancers' input or movement idiosyncrasies are often overlooked. The quality of seeing in annotation is different than for notation, and it was immensely satisfying to attend to details such as the different ways that dancers transfer their weight to free the leg for locomotion, or how the instantaneous lowering of the eye line or the softening of the chest acts as a preparation or initiation for an action. I became interested in idiosyncratic performance details, bodily co-ordination, and movement initiation: subtle details that fascinate me as a dancer, teacher, and movement analyst. Figure 67 and Figure 68 are examples of this.



Figure 67 (left): Annotation used to illuminate the cross lateral initiation of movement in the torso in DancePro. Figure 68 (right): Annotation to show the connectivity between the skull and the foot.

Video annotation allowed me to differentiate layers of performance and movement style: that which was unique to individual dancers and that which was characteristic of the choreographic work. For example, I was able to identify subtle details of unique utterance, timing, and movement initiation of three dancers moving in unison in *Deca Dance* (54:54–55:37 minutes). Simultaneous movement can be seen in the dancer stage left, in how he softens the elbows when releasing the arms from place high (towards the ceiling) whilst releasing the backs of the knees to initiate a transition from a turned-out to a parallel rotation of the legs. In comparison, the dancer in the centre of the trio performs the same movement but leads with the arms, followed by the legs, resulting in a sequential approach to movement initiation. Such differences—i.e. in highly skilled performers performing the same movement in unison with subtle variations in how bodily movement is organised—reveal differences in the approach to, and interpretation of, movement. Although it is possible to document these details in systems such as Labanotation, such a detailed analysis is more than what is required for notation (see Klingenbeck 1930). In video annotation, a task-oriented approach to unpicking choreographic

style narrowed my attention to focus on particular movement details. The concretisation of specific movement details using annotation created a point of reference for future viewing, making it possible to more easily identify when actions or particular movement initiations were repeated and thus drawing attention to characteristics of the choreographic work.

Cabral et al. (2011: 2296) suggest that annotations occlude details of the video content and propose, therefore, that the DancePro notebook space is more suitable for creating annotations than the video stream itself. This occlusion is not necessarily negative. DancePro annotations drawn on top of the video stream provide instant contextualisation between what is analysed and the results of the analysis. They have a clear spatial and temporal relationship to the video source, disclosing a deliberate decision to highlight certain details in a way that shapes the viewing experience.

The spatial content of dance can be classified in choreological terms as having actual or virtual form. Actual forms can be seen to exist in the body such as muscular-skeletal connectivity or the use of body design as drawn attention to through annotation in Figures 69–70 (p. 204). Virtual forms are illusions implied through movement intention, such as spatial projection, examples of which can be seen in Figures 71 and 72 (p. 205). Virtual forms are usually more difficult to identify than actual forms, particularly for the untrained eye, as they require the ability to see an intention that does not reside in the body but in the manner of performance. I used graphical annotations to identify both actual and virtual forms, and also to expose the pathways of movement inside the kinesphere (Figure 73, p. 206) and the spatial configuration of dancers in the general dancing space (Figure 74, p. 206).



Figure 69 (above): Graphical annotation showing the body design adopted by the ensemble in *Deca Dance*. Figure 70 (below): Graphical annotation revealing the lateral connectivity between the head and foot.





Figure 71 (above): Annotation showing the spatial projection of the dancer's focus which is illuminated here as a movement cue. Figure 72 (below): The spatial projection of the dancer's focus towards a dance downstage right diagonal (not in shot).





Figure 73 (above): Annotations that identify a circular spatial pathway of the head. Figure 74 (below): Annotations to highlight the spatial configuration of the ensemble in the general dancing space.



Prior to the development of the Creation-Tool (the precursor to DancePro), computer scientist Diogo Nuno Crespo Ribeiro Cabral (2014: 25) observed that a temporal relationship between annotations and the video source is created in the majority of video annotators, yet a spatial relationship is missing: annotations are typically spatially static in contrast to the moving image. In other words, once created, annotations are anchored to an on-screen location irrespective of any changes to the video content to which they refer. An example of this from my own experience of using DancePro can be seen in Figures 75 and 76 (p.208). In Figure 75, graphical annotations highlight the spatial tension between the dancers' hands in one scene of *Deca Dance*. Here, a curved body design is adopted by all dancers before they turn around their vertical axis and change facing from downstage left diagonal, ending upstage left diagonal. This perceptively small movement performed in place equates to a notable change in space, visible in the discrepancy between the annotations that have been left behind and the new position of the dancers' hands (Figure 76). The spatial context of the annotation to the video content has disappeared.

In wanting to work with accuracy and precision, I shortened the duration of the graphical annotations visible in Figure 75 and created additional annotations to represent the intermediary positions between the beginning and end of the dancers' spatial tension in this body design to maintain the illusion of spatial contextualisation. This approach was time-consuming, leading me to contemplate the need for such precision for my own annotation practice and more generally for the dance community, especially because DancePro is designed as a digital sketchbook and its primary function is not to share or publish ideas. As my annotation practice progressed, the emphasis on precision diminished. This was because of the labour involved in modifying and refining annotations and because of technical difficulties that arose in using DancePro.

The Creation-Tool developers proposed that motion-tracking could enable annotations to be attached to, and move with, an on-screen object, such as a dancer, to maintain spatial contextualisation (Cabral et al. 2011: 2295 and Cabral 2014: 47). Prior to this annotation study, I found it difficult to understand the necessity of such a feature. I felt that the contextualisation already offered by enabling annotations to be stored with the video was already a notable advantage over physical sketchbooks. Anything further felt superfluous. However, with repeat experiences of a loss of spatial contextualisation between the video content and annotation, the prospect of motion-tracking became increasingly attractive. I recognised that the spatial contextualisation between the video and the annotation is what creates meaning and value.



Figure 75 (above): Drawn annotations in DancePro used to illuminate the spatial tension between the dancers' hands. Figure 76 (below): A screenshot that highlights the loss of spatial association between the annotation and the video content.



Fragmented Reading (PM2)

PM2 annotations do not interfere with the video viewing experience in the same way as DancePro annotations do. PM2 annotations look the same and have equal weighting, making it difficult to differentiate between different kinds of information. Annotations do not draw the eye to any particular point in the video, nor explicitly pinpoint how they relate to the video content. I found that it was difficult to establish a representational framework that would help me to organise my observations and make sense of the work. As my annotation practice developed, it became necessary to develop a mnemonic system to organise and navigate my analytic work. This was because the thoughts and observations externalised into annotations were not yet integrated into my understanding of the work: only as tertiary retentions could I call upon them to support and extend my thinking. However, to access the results of prior analysis, one needs to scroll through the list of annotations stored in the column to the right of the video stream. As the annotations became more numerous, searching through annotations (none of which stood out in the way that graphical annotations do) became a daunting and undesirable prospect.

The mnemonic system I devised was based on a hierarchical ordering of information. Because all annotations had the same weight and value, I decided to assign value according to the dominance of the information content. In one particular application of this system, I sought to highlight the correlation between the musical accompaniment and the dancers' movement dynamics, a key detail of the work. I positioned annotations that related to accompaniment as 'master annotations,' which were directly followed by annotations relating to movement dynamics, which I imagined to be 'sub-annotations.' I created an information hierarchy according to the spatial organisation of annotations in which master annotations influenced sub-annotations. The approach clearly constitutes a personal mnemonic system because, other than a consistent ordering of information, there is nothing explicit to it, and is unlikely to be recognised by others without explanation. Nevertheless, it was a workable solution to sorting a vast amount of information might be characterised as a limited, personal, and subjective method. Other annotators would have to find a mnemonic system for making sense of different annotative content for themselves.

The PM2 mnemonic organisational system was not always straightforward: it was time-consuming to implement the particular ordering of information I was after. The timestamp attached to each annotation is listed to the millisecond, and it often took several attempts to create the hierarchical ordering because that meant creating the annotation at exactly the right time. Ordering thus involved

a process of creating and deleting annotations in order to achieve the correct timing (reminiscent of annotating with DancePro). The mnemonic system became more sophisticated with the deeper understanding that arose from repeat viewing. There were instances, for example, when details relating to the accompaniment seemed significant enough to record but did not have an observable impact on the movement performed. It did not, therefore, seem appropriate to implement the mnemonic organisational system in these instances, so instead I included this information inside a regular annotation (that did not adhere to the hierarchy) and used brackets to draw attention to details of accompaniment without a direct relationship to movement. This technique became more tangible when I noted the time in the annotation to allow its relative point to be manually found later. In effect, this created a timestamp within an annotation, but without the data-linking property.

My video annotation experience using PM2 revealed that there must be an active engagement with annotations if they are to shape how the video is seen and contributes to understanding. The viewer does not have the option to rely on the instant spatial and temporal contextualisation that is offered in graphical annotations in DancePro. In PM2, the physical distance between the annotations and the video stream is such that it discourages integrated viewing. It is the viewer's responsibility to integrate the analysis with their viewing if they are to gain deeper insight into the choreographic work. This was seen in the discussion of the annotations in *Using the Sky*, which were also created using PM2. What is challenging, however, is that integrated viewing demands different modes of engagement: watching the video is a different activity to reading the text of the annotations, and managing these simultaneously is difficult. Nevertheless, the labour required when with working with PM2 is rewarded with a deep insight into the choreographic work.

Real-time Live Annotation

Following my study of annotating pre-recorded footage, I embarked on a process of real-time annotation, to follow the live rehearsal process of a choreographic work.¹³⁸ In real-time live annotation, engagement is with the dance process as it unfolds. This means that annotations are created at the same time as the record of dance. It offers access to the nuance of artistic practices in a way that is different from the close reading of video (including the nuances that can be accessed in video close-ups). This was an important perspective for my research, offering an understanding of how annotation practice is motivated and informed by studio-based research. Of course, it would also be possible to access details of the creative practice in the annotation of pre-recorded footage if the

¹³⁸ The technical difficulties experienced when using DancePro for the annotation of pre-recorded footage means that the tool for not suitable for live annotation.

footage documented the creative and rehearsal process and choreographic instruction was embedded in the video source. In my study, the studio practice was filmed by the choreographer and myself, meaning that it was possible to return to study the video footage, but I was interested to explore how the live annotation process would alter the pace of annotation and, subsequently, my comprehension.

Annotating the studio practice in real-time led me to contemplate what kinds of details I should emphasise in annotation. The information transmitted from the choreographer to the dancers through verbal and physical means is captured and embedded in the video recordings of the process, meaning that the PM2 annotations often felt like duplications of this. However, grammatisation transforms the spatial and temporal properties of speech and gesture as they are translated into words. The effect is that an account of the dance is created that does not require future viewers to have to commit to engaging with the entire recording before knowing what they will discover.

The organisational and navigational properties of PM2 annotation are important. The real-time live annotation of dance does not constitute a process of thick-layering in the same way that is achieved in the annotation of pre-recorded footage. Each studio session represents an annotation session, and a separate video file is created for each. This means that the annotations for a single choreographic process are distributed over a large number of video files. No one recording is more important than another, because together they create the building blocks of the work. The corpora (collection of video files) may be beneficial for restaging or reconstructions of the work, or for researchers, because the files create an audit trail of how a dance work came into being.

Observing *Drumstick* as it was taught and rehearsed enabled me access to choreographic instruction and intention in a way that was hidden in the footage of *Deca Dance* and *The Rite of Spring*. It was possible to engage with the building blocks of the work and to identify what specific concepts were important to the choreography. Curtis-Jones's application of Choreutic and Eukinetic frameworks was particularly striking, and these were explicit in both her verbal instruction and physical demonstration,¹³⁹ as well as her use of imagery. The information transmitted through the taxonomical frameworks of Eukinetics and Choreutics, imagery use, and the verbal and physical dialogue between Curtis-Jones and her dancers formed the content of my annotations.

¹³⁹ The Trinity Laban students had some prior knowledge of Choreutics and Eukinetics from Choreological Studies, a component of the undergraduate degree. At the beginning of the process, Curtis-Jones recapped details of this framework. These became quickly and clearly embedded in the dancers' movements and were explicit in the dancers' performance of *Drumstick*. This is indicative of both the efficacy of Curtis-Jones's methodology and the clarity that these analytic frameworks can achieve.

The logistics of real-time live annotation were a particularly prominent and unforeseen element of my practice. *Drumstick* was staged on two casts of ten dancers, and the different-sized rehearsal studios presented challenges for efficient annotation practice. The location and proximity of the camera relative to the dancers' movement became an important consideration. While it was possible to film from different vantage points, I set up a laptop station at the front of the studio facing the dancers. It felt important to have a dedicated space for my laptop and webcam to enable consistency and ensure minimal disruption to the choreographer's process. For me, the similarity of this perspective to the one adopted by a notator was striking.

Rehearsing in small studios meant that only one cast was able to work full-out at any given time, while the other cast marked material or worked on choreographic tasks in any available space at the side of the studio. In these small studios, it was difficult to achieve sufficient physical distance between the movement and the webcam to capture all the dancers' movement in frame. Larger dance studios enabled both casts to work simultaneously, which was advantageous to the choreographic process. However, it was difficult to isolate the two casts in the video, making it challenging to find clarity, particularly as is was not always possible to access choreographic instruction amidst the bustle in the studio, which was heightened when Curtis-Jones moved between groups of dancers. It became necessary to move around the studio to catch the details for annotation, yet this was not always practical, particularly when feedback was momentary. I had to decide whether to relocate my laptop (and attached web camera) each time I moved, even if only temporarily, or to leave the laptop behind to ensure continuity in filming. While each option yielded different results, neither seemed preferable. During the real-time live annotation process, the attractiveness of the immediacy of annotation and the instant contextualisation between the video footage and my observations became apparent. I did not need to record the dancers' movement in time and space, as this was captured on video. My role was to augment the video record with my observations. The motivation for annotation was clearer here than for pre-recorded footage. The advantages of annotation were noticeable in the instances when I followed Curtis-Jones in moving around the studio and left my laptop behind to film. Without the video as a reference point, and in acknowledgment that I would have to retrieve the point in the video to manually input my annotations, I felt obliged to document the movement content in addition to the choreographic direction. This felt inefficient and time-consuming, and I also missed details that I would have liked to use as the basis of annotation. Despite a resolve to input notebook observations into PM2 retrospectively, they were discarded. I found that the details grammatised on the notebook page were likely to re-appear if they were important to the work. Moreover, the choreographic

process was quick to move on, and there was new information to capture. Subsequently, I felt my notebook annotations had diminished in value.

My relationship to the dance work was predominately visual, just like the annotation of pre-recorded footage, and my understanding developed with repeated viewing. Nevertheless, the real-time live experience felt less autonomous than for the annotation of pre-recorded footage where I had been responsible for directing my own analytic activity. In the real-time live process, I did not need to contemplate my motivation for annotation, nor search for the information to annotate, but I was responsive to studio events and directed by the physical and verbal interaction between the choreographer and dancers. This in-the-moment responsiveness contrasts with the reflective and analytic approach characteristic of annotating pre-recorded footage. I annotated what the choreographer asked for, and the imagery used, irrespective of whether the intention was realised by the dancers. This provides an interesting point of comparison to my experience of annotating pre-recorded footage in which it was the dancers' interpretations and idiosyncrasies that became of interest as I looked more closely at the video. It appears that pre-recorded and real-time live annotation are two kinds of annotation practice, but they are not mutually exclusive.

I found that annotating the studio practice as it unfolded had a striking resemblance to my experience of using Labanotation in a live setting, but without the challenge, or autonomy, of deciding how to translate the work. The feeling of a certain lack of autonomy was heightened by the perception of having a marginal status in the room as someone documenting the creative and rehearsal process. This, in part, arose from the pressure arising from the need to re-stage *Drumstick* in a short amount of time.¹⁴⁰ But it was also because the focus was completely directed towards the dance rather than its analysis.

The lack of autonomy, however, is not a negative observation. The responsive nature of the annotation both narrowed and heightened my attention, which facilitated the documentation of individual artistic practice and created an authoritative perspective of the work. Given this, it seems logical that real-time annotation is undertaken by someone who would be able to fully attend to the creative process as it unfolds, perhaps someone other than the choreographer or dancer making, directing, or performing the work.

¹⁴⁰ *Drumstick* was re-staged on second-year undergraduate students at Trinity Laban Conservatoire of Music and Dance as part of a three-week historical project component.

Following the creative and rehearsal process of a choreographic work results in the repeat exposure to movement stimuli and the details of choreographic practice. This repeat exposure inevitably leads to duplications in annotations, but in a way that is different to that which occurs in the annotation of pre-recorded footage where comprehension arises through the repetitive, immersive, and close study of loops of video. Repetition in real-time annotation results from the nature of studio practice, from the ongoing research enquiry of the choreographer and dancers that develops creative response, bodily knowledge, and movement thinking. For the annotator, deep engagement with dance and movement knowledge arises from attending as many studio sessions as possible. Repeat engagement concretises important details of the dance, and these gradually become part of the annotator's understanding.

Discussion

My experience of creating annotations revealed that annotation is an iterative and recursive process that is characterised by the close reading of dance content, i.e. of pre-recorded video or of dance in a live setting. Annotation encourages exactitude and precision through the repeated viewing of dance where different layers of the dance work can be uncovered, through which perception becomes heightened, fine-tuned, and more sophisticated. As discussed in relation to marginalia, annotation involves noticing the previously unnoticed and formerly irrelevant (Orgel 2015: 2). The experience of video annotation challenged my prior assumption that annotation reveals what the annotator knows about the work—or what they feel is most integral to it. On the contrary, because video annotation encouraged an in-depth and repeated study of dance and problem-solving, I turned my focus towards unfamiliar and complex details, while those I found to be easily recognisable or comprehensible in the video were not subject to analysis. My prior experience constructed a lens that unconsciously resulted in inclusion and exclusion criteria for annotation that favoured details that were less apparent in initial viewings. In other words, it felt unnecessary to identify details that would usually be at the forefront of my attention is translating the dance into Labanotation, such as those recorded in the paper-based observations in the early stages of viewing (see p. 191-194). Instead, I was interested in seeing details beyond how the work was ordered, or how best to describe unison movement where differences in performance could be found and to look more closely as idiosyncrasies, spatial relationships, and the project of energy beyond the physical limits of the body for example. Allowing what I already knew, or could easily know, to recede into the background by not annotating these details had an interesting, and unexpected, consequence. It impacted my ability to later recall these details. My experience here implies that annotation is not more objective or scientific than any other mode of analysis—also suggesting a link between memory and what is annotated.

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DancePro annotations operate as visual anchors that directly influence engagement with the video content. As forms of tertiary retention, DancePro annotations provide the possibility to immediately access and recall the results of prior analytic work without the annotator having to recall this in their biological memory. This cognitive shortcut makes it possible to return to a particular moment in the video with increased insight, but also frees the annotator's attention to contemplate other details of the work, creating the conditions to develop a more expansive understanding of the dance. There appears to be, however, a fine balance between the reliance and over-reliance on annotation, which is seen in the discussion of multi-media annotations in the previous chapter. Graphical annotations that operate as visual anchors can negatively influence the depth of engagement, because it can feel unnecessary to return to analyse already annotated content.

In contrast to DancePro, the spatial and temporal association between annotations and the video is weaker in PM2. As the annotations did not function as visual anchors, it was more difficult to recall or access the results of prior annotation sessions, particularly when the work was less familiar in the early stages of annotation. Because of the labour involved in retrieving annotations, it was often preferable to create new annotations—too many annotations—that could then be edited and combined at a later date. The duplication of analytic work did not appear in DancePro because of how most of the annotations are near impossible to miss since their visual value integrates them into the viewing experience.



Figure 77: A graphical annotation in DancePro used to identify the spatial pathway of the dancer's leg movement.

At the start of this study, I had assumed that video annotation would support a holistic representation of movement ideas. While my understanding of the dance works expanded and deepened, what was represented through annotation is fragmented. DancePro graphical annotations, used predominately to illuminate the spatial content of dance, brought my

attention to the temporality of annotations. Much of the spatial content of dance unfolds over time, such as the spatial progression of a dancer travelling from upstage to downstage (Figure 62, p.186) or a circular pathway of the leg (Figure 77). Annotating these details is a sequential activity, one that follows the movement as it unfolds in space and time, through to its completion. Yet this temporality is not maintained in the final annotation and, once created, the annotation appears as an object annotation irrespective of how it was drawn. The movement detail is concretised in the same way that
notebook markings land on the physical page, it becomes an object annotation, and the representation of movement limited by the technological capacity of the tool. Subsequently, the annotation appears as anticipatory data, showing the complete movement detail before it has resolved on the video. In viewing, the information is delivered in an instant and the annotation impacts how the dance is read. This might be described as the pharmacological effect of annotation: the viewing of dance content is supported as the information contained in annotation can be seen in full, but it also distorts the spatial and temporal representation of movement.

An annotation captures a snapshot in time, a material evidence of thinking, interpretation, or understanding, but it is not a complete representation. The annotator's understanding exceeds what is contained within annotations; annotations are merely traces of understanding that require analysis to grasp at their meaning and value. Annotation results in a fragmentation that, I suggest, is not dissimilar to that which is achieved through Labanotation: details of movement are revealed as complete and concretised forms or a series of positions or discrete ideas. Notwithstanding this, it is the spatial and temporal contextualisation of an annotation in relation to the video which is key.

This chapter reported on the first-person experience of video annotation as a method of dance analysis. The two approaches of annotating pre-recorded footage and the live creative and rehearsal process in real-time exposed differences in the attentional demand of the annotator. While the annotation of pre-recorded video felt more autonomous, real-time live annotation created a more authoritative account of the dance work. Pre-recorded footage provides access only to that which is embedded in the video, and the motivation for annotation relies on what the annotator brings to the analysis. I argue that this makes the viewer an uninvited collaborator in their re-authoring of the video record. The annotator's understanding evolves according to the prior knowledge and experience they bring to the viewing experience. I found the pace of annotation to be responsive to, and determined by, studio events. The choreographic process offered explicit instruction in the choreographer's use of imagery and terminology and these details were captured in the video documentation as well as the video annotations. The development of understanding appears to rely less on what the annotator brings through prior experience and more on studio events. In each approach, annotation is a process of augmentation and, crucially, the understanding of the annotator co-evolves through the iterative and recursive process of viewing and annotating dance.

Video has become a ubiquitous device for documenting contemporary movement practices, and many dance companies have built systems and infrastructures for managing the storage of video records.

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The organisational and navigational properties of annotation are useful for efficiently recognising and retrieving the content of these video records. The introduction to PM2 toward the start of this chapter identified how Kern's Piecemaker was intended to do just this: to enable a record of all the details of different viewpoints about a choreographic work. Annotation is a particular way of studying video and has already been established in fields such as cognitive linguistics and human sciences, but it has not yet been integrated into dance practices. Although I adopted an observational and analytic perspective towards the dance in my study of video annotation and have suggested a dedicated annotator, it appears that a collaborative approach to augmenting the video records of dance would be beneficial. Video annotation has analytic, pedagogical, and collaborative potential for artists, researchers, and anyone working with or interested in dance or human movement. Using video to stabilise the knowledge that arises from the artistic, phenomenological, and other kinds of movement encounters would provide valuable insight into different perspectives that would strengthen the collective understanding and knowledge of dance. Drawing upon intrinsic discourse identifies a potential to transmit artist-centric forms of knowledge that resist generalisations in a way that challenges and perhaps distorts the traditional academic/non-academic binary of documentary practices in dance. Through the accumulative thick-layering of information, video annotation helps to develop both the analytic eye and a deep understanding of dance

The next chapter concludes this thesis by drawing together my research findings and argues for the potential of video annotation for the articulation and transmission of dance and movement knowledge. I repeat the key discoveries I have made concerning the characteristic mark-up properties of annotation and how different spatial and temporal assets contribute meaning and value. I reiterate the dialogical mnemotechnical function of annotation and the impact it has on understanding dance and for dance scholarship. As well as identifying what I have uncovered in terms of new knowledge, I also identify the limitations of this study and, in light of these, make recommendations for future research.

CHAPTER EIGHT: CONCLUSION

This thesis has examined video annotation as a method for the articulation and transmission of dance and movement knowledge. I have focussed on three key questions: What is annotation, and how does it function? How can the recent emergence of video annotation be contextualised as part of an analytic trajectory for dance? And, (how) does video annotation shape how dance is seen, analysed, interpreted, and understood, and therefore contribute to collective knowledge? These questions were motivated by the fact that literature relating to dance annotation is not readily available because not much has been published; in fact, discussion of annotation is largely absent in dance research despite growing interest by a handful of researchers, as evidenced in the publications and tools discussed in this thesis. This absence exposes the gap in the literature that this thesis addresses. The concluding chapter reiterates my key findings and what I have uncovered in terms of new knowledge.

My discussion of technologies of grammatisation drew from the work of Stiegler (1998, 2009a, and 2014a) and Ong (2012), which enabled me to highlight the mnemotechnical properties of video annotation. I have argued that video annotation is like writing and notation practices, because it grammatises the temporal flow of an activity into a spatial and visual concretised form (the annotations themselves). This externalisation creates a form of prosthetic memory, or tertiary retention. However, annotation is different to writing and notation because it creates tertiary retentions *in relation to* a mnemonic record (i.e. books, notebook markings and video) (see Chapter Two: 41-43, Chapter Five: 132-135, Chapter Six: 152 and 184, and Chapter Seven: 198 and 210-211). I have argued, therefore, that video annotation is a *dialogical mnemotechnic*. The temporal and spatial relationship between the annotation and the video content is the defining property of annotation and makes it possible to distinguish between the mnemotechnics of writing and notation, and the dialogical mnemotechnics of annotation.

Through my analysis of choreographic notebooks in Chapter Five, I challenged the assertion that all notebook markings may be described as annotation (De Laet, Cassiers, and Van Den Dries 2015). I have argued that annotation is, by definition, dialogical: its meaning is constructed in relation to something other. Any suggestion that annotation exists before the grammatisation of the artefact that it augments is to miss its crucial mark-up function. I have shown, however, that annotation does not only comprise layers of information created over an existing source, but that it may occur in the very moment that the source is created, or ideas are externalised (e.g. in embedded annotations [Chapter Five: 132-135] or in real-time live annotation [Chapter Seven: 197-199]).

Including embedded annotation in the taxonomy of what annotation is was possible because of my analysis in Chapter Five where I argued that notebook markings may be classified as annotation if they are used to add emphasis *during* the grammatisation process (Chapter Five: 132-135). I showed this idea of embedded annotations through the descriptive analysis of extracts from Morris's *Morning Books* which revealed that mark-up techniques (such as underlining and punctuation), despite their limited discursive content, disclose the dynamics of thinking in the moment of writing. This claim is strengthened by Chapter Two's description of marginalia as a bifurcate practice where the discussion of footnotes, as authoritative annotations and the successor of printed marginalia, enabled me to challenge the conventional understanding of when annotation activity happens (Chapter Two: 46-47).

Characterising certain kinds of notebook activity as annotation led me to conclude that voice and gesture could also be positioned as annotative forms, if they draw attention to details of dance and movement knowledge. Subsequently, once the discussion of annotation extended beyond physical print forms into the territory of continuous media, the conceptualisation of what annotation *is* becomes more complex. I have argued that not all approaches to annotation are grammatised as stable forms, meaning that certain kinds of annotation externalise and spatialise dance and movement knowledge in a way that resists prolonged study. This is not grammatisation in the strictest sense of the phenomena, because the physical inscriptions do not manifest as tertiary retentions on their own terms but shows that annotation can have the same transient quality as the source it seeks to augment (Chapter Five: 147-150).

The proposal that annotation is not restricted only to graphical or language-based forms is a contentious point, primarily because the visibility of these forms directly impacts the ease with which they can be categorised as annotation. Moreover, the aesthetic of vocal and gestural forms creates less of a contrast to the information source than those graphical and text-based annotations analysed in this study. However, Chapter Two noted that annotations are *"rarely* consistent with the aesthetic of the source" (Marshall 1997: 137 [my emphasis]), suggesting that aesthetic consistency is a possibility. What is important is that the success of annotation as a communicative vehicle relies on its specificity in relation to the content of the source that it seeks to draw attention to. Despite their transient nature, I have argued that voice and gesture concretise dance and movement knowledge in a way that is accessible to a community of users (Chapter Five: 147-150).

I have argued that the dialogical mnemotechnical property of video annotation can transform the way that dance is seen. Annotation is, as Chapter Two discusses, different to regular viewing: "the

annotating frame of mind changes the conditions of reading and subtly alters the experience" (Jackson 2005a: 250). In the first instance, annotations create a tangible record of observations about the dance that is studied. In future viewings, the same annotations provide access to information and knowledge not yet physically or psychically embedded in the annotator's experience of seeing dance, thereby supporting memory (tertiary retentions). The dance is viewed through the individual's prior experience (retentions), what they are expecting to see (protentions), and the annotations, which combine to construct the lens through which the dance is seen and interpreted. With repeated viewings, annotations become familiar reference points that are gradually integrated into how the individual sees the dance. Over time, the content of annotations weave into the individual's biological retentions and protentions, meaning that the attentional capacity of the mind then becomes free to see different details, or deeper layers, of the dance work (Chapter Six: 182-181 and Chapter Seven: 214-216). While people see dance differently, consensus in understanding can arise when details of the dance are grammatised through video annotation.

Grammatised records of dance (i.e. notebooks, notation, video) provide access to a non-lived past (Chapter Four: 90-92 and 99-100), and a review of the literature about dance and movement notations, combined with my analysis of primary sources, helped me to establish a trajectory of invention, experimentation, and innovation in analytic and documentary practices. I discovered that notational advancements transpired not only because of technological limitations (i.e. what notation can document about dance) but also because of social factors. Subsequently, I have characterised dance mnemotechnics as socio-technological systems, co-evolving with available technologies, ideas about dance, and efforts to articulate and transmit these ideas. New approaches to dance and movement notation are scrutinised when they are tested by a community of users, which leads to their development, refinement, and re-invention and, in turn, may transform dance and movement knowledge (Chapter Four: 116-120). Importantly, I have identified that what is known and understood about dance for both the individual and for the wider dance community is co-constructed with and through mnemotechnics (Chapter Four: 116-120, Chapter Five: 144-145, Chapter Six: 176-178, and Chapter Seven: 213-217).

I have highlighted that, despite twentieth century aspirations for a single method of movement notation, the different (and sometimes competing) systems invented throughout history broaden and strengthen what is collectively known about dance. This is an important recognition because it illustrates that no single approach can fully and truthfully represent the knowledge of dance (Chapter Four: 122), which is also the case for video annotation (Chapter Five: 141-142, Chapter Six: 181, and

Chapter Seven 214-217). Dance and movement notation systems are important mnemotechnics, but as humankind's relationship to technology changes, so do the questions and methods that guide scholarly and artistic practice. I have discussed how the dissatisfaction with traditional codified systems of notation as standalone methods for documenting Western contemporary dance practices is one of the key drivers for the recent emergence of video annotation as an alternative method of analysis (Chapter One: 22-28 and Chapter Four: 122-126). I have argued that while video captures a rich visual record of dance, it has not removed the need, or desire, to examine movement practices through an analytic lens. Video annotation has the potential to draw attention to different kinds of knowledge about dance, including experiential knowledge, which is traditionally overlooked in favour of recording the movement of the mechanical body in time and space (Chapter Six 176-178 and Chapter Seven: 217).

Video annotation is in its infancy relative to the rich heritage of dance and movement notation, yet it was only three decades after debates about competing twentieth century notation systems that Forsythe's *Improvisation Technologies* was published. In the space of three decades, ideas about dance and how it can be recorded have developed to such an extent that documentary practices have shifted from efforts towards universality (as seen for Labanotation, Benesh Movement Notation, and Danscript) towards transmitting individual narratives.

Studies of marginalia (Jackson 2001, Jackson 2005, Sherman 2008, and Goss 2015) in Chapter Two provided the foundation for characterising annotation as an editorial practice, and Chapters Six and Seven showed that video annotation is a highly specific process that isolates, maps, and concretises thoughts, ideas, and observations about dance. I have revealed that annotation creates a nuanced perspective of video materials by privileging some aspects of dance and movement knowledge over others. In doing so, my research has discussed two equally valid approaches to video annotation: authoritative and derivative. Neither derivative or authoritative accounts of dance are more meaningful or valuable than the other, because annotation enhances the value and utility of video materials to suit particular needs.

Chapter Six analysed examples of authoritative annotation practice, which were developed by, or in close collaboration with, those who have first-hand knowledge of the movement and choreographic practices studied. This was seen to a lesser extent in Chapter Seven's discussion of the real-time live annotation of a choreographic work. I have shown that authoritative perspectives control what

narrative is transmitted about movement and choreographic practices (Chapter Six: 177-180 and Chapter Seven: 212-214).

The literature of marginalia shows that publishing critiques of texts through (what I refer to as) derivative annotations was a deliberate practice to fuel controversy and/or advance scholarship (Chapter Two: 46). In derivative practices, I claim that the annotator becomes an uninvited collaborator in meaning-making, re-authoring the video source without first-hand access to the thinking, knowledge, and ideas that drive the information content that they study (Chapter Seven: 216). This was shown in Chapter Seven, where my annotation of pre-recorded video footage was motivated by my own knowledge, interests, and experience. However, based on my experience of creating annotations, I have argued that derivative approaches have great potential for developing the analytic eye (Chapter Seven: 217) and that this, for example, applies equally for artists wanting to know more about their practices, in educational contexts, and in the development of critical appraisals or anthologies of choreographic practices.

A key consideration that I have identified is the extent to which understanding can be developed with, and through, authoritative and derivative approaches to video annotation. The multi-media publications discussed in Chapter Six use video annotation in seeking to elucidate details of contemporary movement practices. I wanted to discover, independently of what the publications claim to do, what understandings arise from annotated materials and how annotation supports or hinders what is known, and what can be known, about dance. This was fuelled by an understanding that annotations are not complete representations of knowledge (Chapter Two: 45, Chapter Five: 141-142, Chapter Six: 181, and Chapter Seven 216). In the multi-media publications that I have studied, annotation is assumed to be valuable, yet I have shown that significance and value is dependent on several factors. These factors include the spatial and temporal association between the annotation and the video content (Chapter Six: 147-152 and Chapter Seven 200-209), and the commitment and labour of the annotator or viewer (Chapter Six: 182-184 and Chapter Seven: 214-217).

Further to creating an edited account of a video source, my analysis reveals that the annotations themselves are not fully representative of understanding. This is because their meaning and significance is not retrievable from the isolated mark, but only in its relationship to the source. Because of how annotation creates a bridge between the internal or biological memory of an individual (retentions) and the content of the source, the understanding of dance is neither contained in the individual nor the annotation, but in the dialogical encounter between the two. I have shown,

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therefore, that the key to interpreting, or understanding the value of, annotation partially resides in the tacit knowledge of the annotator. This means that annotations do not tell a complete story when they are orphaned from the source that they mark-up; the co-dependency between the annotation and the source is essential for meaning and value. Subsequently, it is a mistake to position annotation as merely a layer that sits on top of, or alongside, a given source (Chapter Five: 132-135 and Chapter Six: 184).

The discovery of how video annotation can transform dance viewing is an important contribution to dance studies, because it sheds light on how annotation functions and the labour involved in creating and reading annotation. While the multi-media publications analysed in this study claim to be able to transcend the traditional readership for dance and, in some instances, provide "audiences with a set of analytic skills to become better readers of dance performances" (Groves 2007: 92), I have highlighted an important caveat. My study has shown that annotation has intrinsic value, provided that the annotator or the viewer engages deeply with dance content, time and again. It is through the looping of perceiving and re-perceiving that annotations, as tertiary retentions, are woven into the fabric of seeing; is it also through this loop that annotations advance understandings about dance. Thus, I have argued, the pharmacological nature of video annotation becomes apparent: a great amount of commitment and effort is required from the annotator or the viewer, but they are ultimately rewarded for their effort and commitment in the form of improved insight (Chapter Six: 184-184).

To build theory about the characteristic properties of annotation and the experience of engaging with it, I involved myself directly with, and examined my experience of, creating annotations. The descriptive and comparative analysis of *Improvisation Technologies, Material for the Spine, Synchronous Objects,* and *Using the Sky* in Chapter Six led to the development a taxonomy for video annotation. I categorised annotations as either graphical or text-based in appearance and method, categories that were further divided according to how the annotations operate in dialogue with the video source. I highlighted that object and sequential forms, types of graphical annotations, can be used to convey different conceptual and qualitative ideas about dance (Chapter Six: 147-160). I described text-based annotations as either digital marginalia, which provide a commentary for video, or linked annotations that manufacture pathways between materials (Chapter Six: 169-171). This taxonomy is valuable because it supports the analysis of what annotation is, based on the annotation's appearance and how it illuminates details of dance.

Through periods of extended study, I discovered that graphical annotations have greater initial impact on viewing dance videos than text-based annotations. This is because graphical annotations are often alluring forms that coerce the viewer's attention, effectively making the fabric of the dance beneath them disappear. Furthermore, because of how graphical annotations (usually) contrast the aesthetic of the video, they serve as a constant reminder of what to attend to in viewing. This led me to characterise graphical annotations as visual anchors that actively support the recall of prior analysis (Chapter Six: 151 and Chapter Seven: 215-216).

Despite their visual accessibility, I discovered that graphical annotations can restrict the depth of the viewer's understanding, meaning that assumptions and misinterpretations about the dance can arise (Chapter Six: 183-184). I have argued, therefore, that the deep and active reading of the video is crucial to combat the coercive nature of graphical annotations, through which the hold that they have over the viewer gradually diminishes as they become integrated into the fabric of seeing. Subsequently, as my study has shown, while graphical annotations have explicit communicative intention, their significance and value does not become apparent unless the viewer invests time and labour to decode them (Chapter Six: 182-184). The challenge here is that, in viewing, there is no direct or immediate need to translate video annotations in the way that, for example, the reader must translate the symbols in a notation score. This means that there is little incentive to engage in the ongoing and indepth study necessary for truly enlightened viewing. Subsequently, I argue that graphical annotations tend to encourage passivity in viewing. They only have the *potential* to be meaningful for dance viewers.

My analysis revealed that digital marginalia have less direct impact on viewing dance than graphical annotations. This is because while digital marginalia construct an interpretative lens through which to view dance, the contrast between the written and visual information creates difficulty in engaging with both at the same time (Chapter Six: 169-175 and Chapter Seven: 209-210). Because of the physical distance between annotation and the video content, I discovered that there is no easy or instant reliance on, or access to, analytic insights. Nevertheless, I have described how the very labour required to engage with digital marginalia ultimately facilitates a deeper insight to the source (Chapter Six: 174-175 and Chapter Seven: 209-210).

The Literature Review in Chapter Two identified two categories for the function of video annotation: offering a commentary or perspective on a source, and organising and navigating dance and movement knowledge. The editorial properties of annotation have been at the forefront of the discussion in this thesis because of how they shape and transform understandings about dance. Annotations that support organisation and navigation, i.e. linked annotations, have received less attention. Linked annotations are subtle in function, and more discreet than graphical annotations and digital marginalia. While they do not directly interfere with the viewing experience, however, I have described how linked annotation manufactures pathways between video and analytic materials to impose a structure through which dance materials are navigated.

A key finding of my research is the recognition of the labour involved in reading and decoding annotation. This is important because I have identified that one of the drivers for the emergence of video annotation is the dissatisfaction with traditional codified systems of dance and movement notation. I have argued that any supposition that video annotation is less time-consuming or restrictive than notation practices is misleading (Chapter Six: 181-184). I have shown that, for human agents,¹⁴¹ creating annotations exist on a spectrum from tagging (immediate encounters with materials where little consideration is given to the content of annotations) to more detailed analysis. This means that a superficial engagement with dance video constitutes the early stages of creating annotations (Chapter Seven: 191-195). But to develop understanding beyond what one already knows and to see something new (either as the annotator or the viewer), a rigorous approach to viewing is needed. The reworking of annotations as an individual's understanding develops means that an audit trail of how thinking develops does not always materialise, however, when it does, this audit trail can provide valuable insight into the annotation experience.

Future Research

My study has examined what dance annotation is, how it contributes to the analytic trajectory for dance, and what it offers dance scholarship. While the extent to which video annotation will be embraced into artistic practices remains to be seen, the discussion of what annotation offers the wider dance and research community invites further exploration.

In my experience, annotation can be beneficial in restoring something that is lost from the video version of dance work. I experienced this in relation to how the spatiality of dance is represented (Chapter Seven: 198-200). It is possible to see from my analysis of the four multi-media publications in Chapter Six that authoritative approaches to annotation can support the interpretation of dance.

¹⁴¹ I say human agents here simply to recognise that annotations can also be automated computational processes.

The notion of returning something lost to mnemotechnical records has been alluded to in my study and indicates a key consideration for future research.

A much-needed area for future research is how annotation tools can be integrated into studio practices to support creative and choreographic processes. My research has touched upon how authoritative perspectives of dance can be developed through interdisciplinary and collaborative processes, such as in the multi-media publications analysed in Chapter Six. However, further research is necessary to examine how the experience and perspectives of those involved directly in movement practices can further contribute to the collective knowledge of dance. The introduction to PM2 in Chapter Seven identified that the motivation for Piecemaker was to record different viewpoints for the efficient organisation and retrieval of details about how choreographic works were developed (Chapter Seven: 189). My research focuses on what annotation offers as an analytic method, and subsequently additional research is necessary to examine collaborative and multi-faceted annotation in practice, and what this could offer creative processed in dance. Such an enquiry would provide an opportunity to interrogate the affordance of different approaches to annotation (i.e. graphical and text-based) for the advancement of creative practice as well as to whether, and to what extent, ideas written in notebooks are different to the nature of ideas that are typed or even drawn using digital tools. For this research to transpire, it will become important to more clearly articulate, examine, and address the barriers between digital tools and the dance community.

In addition to developing insight into what annotation offers creative and choreographic process, the discussion of video annotation warrants research into how dance viewing can be further supported. My study has shown that, in constructing a referential framework for dance, video annotation is a distortive practice, representing only partial knowledge of a work. The coercion of the viewer's attention towards certain details of dance content (for graphical annotations in particular) can discourage the viewer's own analytic investigation. This is because the primary task is to read the dance with, and through, the annotations. Given this, I argue that annotation tools should be built into multi-media publications to enable viewers to advance understanding through their own re-authoring of video content. Combining authoritative and derivative perspectives in this way has greater potential to facilitate deeper understanding than is possible through viewing pre-annotated sources alone. Furthermore, this would challenge the level at which the viewer is satisfied in their interpretation of annotations. This, I propose, is a key area for future research—how annotation can engender the active and curious viewing of dance videos.

The descriptive analysis of *Process Catalog* excerpts from *Synchronous Objects* provided valuable insight into the challenge of, and labour involved in, finding the right approach to annotating dance. The *Process Catalogs* create an audit trail of experiments that traces developments in thinking during the research process. However, the iterative and recursive nature of the annotation process (highlighted in Chapter Seven) means that annotated multi-media sources designed for publication provide a summative, rather than formative, access to the annotator's understanding of dance. Given the power of annotation to create an interpretative lens for viewing dance materials, further research into the thinking and choices made during annotation would advance understanding of the annotation provide further insight into the nature of annotating dance sources and to show how the traces of thinking can be preserved in a similar way that the traces of human thought left in the margins of books can be preserved.

This study has focused on video annotation as a method for the articulation of dance and movement knowledge. In response to the question, "What is annotation, and how does it function?", my research has revealed annotation to be a tool for the comprehensive analysis of dance. I have devised a taxonomy that supports future analysis of already existing annotations by enabling them to be understood in terms of their appearance and their spatial and temporal relationship to video content. My experience indicates that attention to the content, form, and function of annotation marks will help readers of annotation to recognise the coercive properties of annotation that can limit and restrict the interpretation and understanding of dance. The second aim of this research was to position video annotation as part of an analytic trajectory and part of the ongoing search for suitable approaches for documenting ideas about dance. I have shown that annotation is a process that helps artists and researchers understand their practices from different perspectives. Furthermore, annotation can create narratives about particular practices that shape the individual and collective knowledge of dance. Thus, I have responded to the third question of this research, which focuses on what annotation offers dance scholarship. While I have shown that video annotation continues an already rich heritage of analytic practices in dance studies, this thesis is also the first step towards a much larger body of work that recognises the potential of video annotation for contemporary Western dance scholarship.

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Appendix A: Ethical Approval
Appendix B: Unpublished Conversation between Florian Jenett and Rebecca Stancliffe Frankfurt, Germany—November 22nd 2016

- REBECCA: Motion Bank was a four-year project with the Forsythe Company and the scores website was one phase. What was your relationship to the project? And, was this your first experience of working with dance and movement?
- FLORIAN: Yes, it was. So, I was invited through my school, my former school, three years prior to Motion Bank, I think. The school itself was part of how this funding was set up with the project. They were invited to participate because of the state funding and two alumni were invited, Amin Weber and myself, to fulfil the role of the school within the project. And that role was phrased as 'digital artists', whatever that meant. So, I got a call at some point from my former professor who sent me an email with a link saying, "can you do that?". For some reason, I knew *Synchronous Objects*, I am not sure why actually, and my first reaction was "No problem, we can do that...easily". I said "yes, sure, we can" and agreed to become part of the discussion around working for the Forsythe Company, and then ended up being one of those digital artists with the project. But, that took another... almost a year to actually start working on the project. So, from the first call to hands-on working was almost a year.
- REBECCA: So, you came on as a digital artist that....
- FLORIAN: Yeah, so I studied art but in a design department. It was called visual communication, but it's now no longer called that. I did, basically, art... not really design work and a lot of technology projects. Partially because I financed myself through that and partially because I was always interested in the relation of digital tools, writing of software, programming, and art-marking, designing things, so I ended up in a place where the I would do the implementation, for example, of web systems for friends of mine who did the design as part of the whole job. So I did a lot of technology work in the design field and the school knew that and so that's why they invited me.

... I had no prior contact to dance really, not contemporary dance... not what I ended up working with in the project, what I thought... I think my picture of contemporary dance was totally different before... so it was completely turned over through the project. Also, I had no prior contact with the idea of annotation as a time-based annotation before, or at least not in the way I would recall the encounter by itself. I mean sure, cueing and, you know, all these things that are part of software products, I know those and I knew those back then, but it never occurred to me as something specifically interestingly...

So, actually I am coming from drawing, really a classic artistic background. Drawing always had this notion of thinking for me... and, at some point... ideas, sketching up sculptures as drawings wasn't interesting enough anymore so I moved onto doing real installations and sculptural work, so it became three-dimensional and more complex and bigger projects, but still... I would still say it's sort of the same how I perceive these things, so I don't see much of a difference between the original drawings and the actual work that is there after building the sculpture. So it's still a way of manifesting thinking, in a way. And that came back with annotation. So that's, sort of, my perspective on annotation as a method of being able to take on a specific perspective and start thinking... within the material, not only about the material, and using annotation to, kind of, sketch out things. So, a technique that helps you

crystallise thoughts but also a way of thinking in itself. This is how I perceive annotation... meaning time-based annotation, because a lot times it's not... [laughing]

REBECCA: It's not! [laughing]

FLORIAN: ... people get confused, [laughing] "what do you mean by annotation actually...?", so I'm

talking about time-based annotation.

- REBECCA: ... time-based annotation...
- FLORIAN: ... time-based, right.... and not *notation*... which is the next question
- REBECCA: Yes! Because they are similarly sounding and dance has an established history of movement notation. I found that annotating allowed me to 'see' movement details. Once I had established an approach, I had a purpose for seeing, or a purpose for looking at material. You didn't have much contact with contemporary dance beforehand, do you think annotation gave you a way to look at the material that you might not have otherwise...
- FLORIAN: Yeah... it's both. I mean, sometimes annotation is sort of the task that draws your attention to something specific that you couldn't have seen any other way because you did not pay attention to that specific aspect. And sometimes, you're trying to look at the material and you're annotating but you don't know what you're annotating and then at some point you look at the annotations and a pattern emerges from the annotations. So, both of those ways are there, it really depends on what you're setting out to do...
- REBECCA: Yes, so...
- FLORIAN: For me, it was a big eye opener doing the annotation work on Deborah Hay's solos because we had to do so many, 21 versions, and it took almost a year to do all those annotations. That close-looking at stuff... allowed me to... develop something like a feeling for movement within the video. So, at some point I could predict what they would do...
- REBECCA: Yes...
- FLORIAN: ... I'm not sure if it's memory, it could also be that I memorised specific movements happening. But the way it felt for me was that I would, at some point, be able to see shifts in energy, for example, within the dancers. We did interviews with the dancers discussing those annotations and they felt that that we did a really good job finding the moments where things would change, for example. So, sometimes it's not even a clear movement with that specific piece where the change would be, it's just a shift in energy or a shift in the tension that you can feel from the performer when you closely look at it, the video.... that would mark the transition from one part to the other...
- REBECCA: What was your.... way in... way in to starting? Because a year is a really long time to be annotating for... How did you start that process?

FLORIAN: Well... Pretty blindly [laughing]. So, we had too many markers in the beginning, and they were not well labelled, so we did a lot of work that was useless in the end, but we had to do it because it gave us a way of under...actually, we had no way of understanding the piece through any other method than annotation. So, we needed to have a basic set of annotations within those 21 recordings to find out that there *are* substantial differences, which we didn't see before, we didn't know they were there. Finding those made us generalise some of the annotation work that we did, so we clustered specific annotations into one annotation and that helped us to get to a set of annotations that would be true for almost all 21 recordings so that they become comparable, which was the main goal that we set out for, to find.... a set of annotations for each of the 21 versions that would allow to compare those parts within the performances.

So a lot of things that I now would recommend as an approach to annotation came out of reflecting upon that process. So, for example, I would propose to first annotate what I call the 'beacons', so basically the easy to find spots that you can easily annotate that would give you a basic shape of the landscape of the annotation work that you have to do, then it's way easier to find... a spot where you have to cram in ten more annotations within those two beacons

- REBECCA: uh-huh...
- FLORIAN: ... then it's easier to find those ten annotations compared to having to search through a full fifty-minute recording...
- REBECCA: So, did you start from the beginning, and just annotate from the very beginning? Or did

you...?

- FLORIAN: Yeah, so I started from the beginning and did the easy ones first, mostly. But I didn't really think about that, it's just the ones that I found first. And then I figured that actually they're almost always at a specific time range and then I started specifically looking for those...
- REBECCA: uh-huh
- FLORIAN: ... I would put those first and then I had sort of a skeleton and would fill in the complicated ones later on. But, that's really something that came out of the process of doing it, it's not something I planned out to do beforehand. But it turned out to be the fastest and easiest way to do it.
- REBECCA: What were the beacons...?
- FLORIAN: Well, sometimes these would be singing or a specific point on stage that needed to be reached, or something that you can very clearly find within the audio, or... visual track. And then that would be a beacon, that moment that's easy to find is the beacon.
- REBECCA: And did you meet with the dancers only after that process had been completed, or was it part of an ongoing dialogue?

- FLORIAN: We just met once with Jeanne and once with Ros, I think... we looked at two full annotation recordings with both of them... with Ros it might be only one, but at least one full recording with both of them... so it's two different recordings, they didn't look at the same recording. We wanted to... check against their inner mental memory model of that performance, and the piece in general. So... it was actually quite interesting to discuss with them... sort of when changes happen, for example. Because... there's no clear yes or no, so it's not a binary decision in a way.
- REBECCA: There's no right or wrong...
- FLORIAN: Yes, because it depends on your perceptive. So... a dancer has a different perspective of when they change to another scene, for example. At least for them it was like that, so they would say that they are actually in the next part already although they're still... although their body is still finishing the part that they've been in.... Because the thinking process, the planning, the getting into happens already, before it actually becomes visible, and that depends on how long before... or sometimes they would look for the moment that would allow them to go onto the next part, or something like that. So, it's not very simple and that's something that you cannot see easily from outside, so you can see once it manifests in the body, but you cannot look into their brains, obviously.
- REBECCA: [Laughing] That's a whole different annotation process?
- FLORIAN: [Laughing] Yes, it a whole different research field!

So, what I set out to do is to allow the audience of the videos... to let the viewers into the piece. The point of change that I've chosen for those parts is always the point that felt visible in a way to me. So that it's something that a viewer later on can understand. Because if you just put it somewhere and they cannot understand why it's happening (it might be an error as well)... so they cannot really tell. And... you could write it somewhere, but that's not the same thing. So, for me, it felt it should be something that they can feel and see, so that's what we settled for, something that's understandable.

- **REBECCA:** Were these annotations were they language-based markers...?
- FLORIAN: Uh-huh...
- REBECCA: So, did you develop your own way of describing what was happening?
- FLORIAN: No... it was basically like tagging. So the dancers, in conversation with the choreographer had developed a set of key words for specific parts of the piece that would help them discuss and train, basically, the solo. So, we heard them use those words and at some point, asked if we can get them and that was the first set of markers we had. We tried to stay with that language as closely as possible. They're sort of descriptive in terms of that they're part of the underlying text of *No Time to Fly*, but mostly it's like a word or two words, like 'curve path' or something like that... We used those as... similar to tags... so we put them at the point in time where we felt the video would start relating to that part of the text...

REBECCA: Okay...

- FLORIAN: ... so it's basically linking each recording to a specific set of parts of the text.
- REBECCA: Oh, I guess then... because the dancers are all working with the same score, then there will be those tags... Everyone will have their own set of tags...
- FLORIAN: So it's the same... the names of a sequence of how things happen within the text, and that gave the sequence for the performance and hence we can link those through that sequence...
- REBECCA: You can link those together...
- FLORIAN: So we were basically... we re-linked each recording, each performance, back to the text and through that to the other recordings. So it was... a man in the middle thing. [Laughs]
- REBECCA: [Laughs]

And do you have a grand mission? Or are you taking things as they come?

- FLORIAN: Well, we're planning to continue the work that we've started to do, which is... a pragmatic approach to software for dancers, that would help document, translation... documentation and translation, and publication of choreographic knowledge by means of software.... And looking into... all the possibilities that the digital world allows us to draw from to help with those things, basically. So... it's very diverse in terms of what we link to. At the core, it's still... helping... record process in a way and helping unfold process into something that's understandable, and then helping to look at and formulate that in a way that bigger audiences... larger audiences can consume that. So... in a way, what we have with Piecemaker and MoSys... a way of recording and publishing those things. But also looking into other ways of recording and other ways of processing the data. So we're open to a lot of fields that attach to what we are doing at the moment. So, no I wouldn't say we have a grand mission... Other than being the best at what we are doing. At least it's not as simple as one mission.
- REBECCA: So, can we talk about the development of Piecemaker2...? So, from Piecemaker1...?
- FLORIAN: ... I'm not sure how the actual conceivable phase happened. He [David Kern] tells the story more from a... group perspective? I think... he's not putting himself into... the main position, but I think he is the one who made that thing [Piecemaker]. And not only developments. So there was no-one there telling them what to do, they had no clue. So it might have been something that was in the air within the company, especially the dancers and Bill, and that he distilled it into that idea and then started working on that. He did all the developments, so Piecemaker1 is his... actually that thing in itself is a couple of versions within one version [laughing]
- REBECCA: [Laughing] So version 1.1...
- FLORIAN: [laughing] So it went through all kinds of different stages and phases, but that's solidly his work. When we started Motion Bank every recording we did had multiple streams of video plus additional information that we wanted to add, and we figured we would

need a system to allow us to bring those things together on a time basis and to be able to jump and interrelate things. We got to know Piecemaker and decided to use that. It was... in a way, the most pragmatic thing, but also the most obvious thing to do because it was already there and we wanted to find ways to include the company, the dancers, and David... I think somewhere around the first year the decision was made to start a sub-branch within Motion Bank that would look into... translating David's work into a new version of Piecemaker and also because we had to fulfil a contractual need to develop software within the project, within those funded four years.

- REBECCA: Was that a contractual obligation for ... because there is PM2GO and Piecemaker2... so was it a contractual obligation to make something that was open?
- FLORIAN: Yes. It was... I'm not quite sure how it was phrased but it was... There was no requirement for it to be open as in open-source, but there was a requirement for it be free, and freely downloadable. But there were no requirements for what it was that we were going to produce. It was just supposed to be a tool around recording, documenting, notating dance in a way, whatever that is...
- REBECCA: Uh-huh
- FLORIAN: So, yeah. That gave life to PM2GO, basically, and, most of that endeavour was... feeding into the development of PM2GO. From our internal perspective, the perspective of Frankfurt team working on the website, and the scores, the website aspect of things, and working with Piecemaker1, we felt that PM2GO was too small of a tool for us to use because it was very specifically aimed towards recording within a studio and not that kind of system we needed for the work we are actually doing on a daily basis. So, we kind of piggybacked that PM2GO process and... started working on Piecemaker2 within that PM2GO process.

So, the outcome of phrase one of Motion Bank is... PM2GO as the downloadable easyto use, in the studio, everybody can use tool...

- REBECCA: As long as you don't have important annotations...
- FLORIAN: [Laughing] As long as it doesn't eat your cat or something...!

And it was the foundation of what we now call Piecemaker2 or PM2, but it was never fully finished. So, those last bits and pieces for it to become what we use today weren't there after phrase one, that's something that we have added over the last two years.

- REBECCA: So it's still developing?
- FLORIAN: Well, I wouldn't call it development [laughing]
- REBECCA: [Laughs]
- FLORIAN: I think it's, sort of, hot-fixing, it's a mixture between hacking and hot-fixing, and all those bad aspects of development. But it's still evolving in a way. So... I'm... my approach is very pragmatic. So, as long as we don't have substantial funding for

proper development all we can do is smaller changes and fixes and that's, sort of, the way we do things at the moment. So most of the stuff we did is stuff that we needed, stuff that someone needed, or that we needed for a workshop or something similar... and stuff that is just making the system easier to maintain and set-up and all these things. In a way it's not a lot of development but it's still substantial development because otherwise it would not be usable at all, but it hasn't been months of coding or something more. I think the biggest leap was done at the end 2014 leading into the Shanghai workshop we did with the theatre academy. We had this thing that was not finished. So I did a lot of coding in airports and in hotel rooms in the two weeks prior to that workshop. And it was just enough time to get it working until then. So we came out of the workshops having a version of PM2 that was fully usable and supported Chinese characters...

- REBECCA: Wow, amazing...
- FLORIAN: It was a really good outcome actually.
- REBECCA: I was using PM2 recently and found that if you click on the clock icon it takes you to the PBA timeline...
- FLORIAN Yes.
- REBECCA: ... I'm guessing that it's the interface for the Pina Bausch Foundation? What's the relationship between PBA timeline and PM2?
- FLORIAN: Well, some use cases are too big for us to easily integrate them with Piecemaker2. And, actually, when we say Piecemaker2 we're mainly talking about that beige web front end, which is just part of the software. So, the front end is separate from the back end of the database that live on the server and they are self-contained. The front end just attaches to that.
- REBECCA: Okay...
- FLORIAN: So those two are loosely bound through what is called an API, which is a programming interface with a specific set of commands and ways of talking to each other. So, if we have requests for additions or specific needs that are too big for that front end, the beige front end, then we can just do a self-contained project on the side. And, because that self-contained project on the side can talk to the back end (because through that API it doesn't have to be through the front end) it can be a separate project. So the timeline interface that you're talking about is something that was funded by the Pina Bausch Foundation and it's just, just in quotes, but it's just a prototype for us to try out... basically for them to try out annotation... using a timeline, I guess that's the easiest way to say it. So they have a specific set of what they call titles, which are set scenes for the pieces of Pina Bausch and they have many many hours of recordings. So they need a very simple interface for people to annotate those titles onto those old video recordings or film recordings. So they've been using PM2, the beige interface, the front end and felt that this list style annotation is really hard to grasp, to really understand where things really lie in time, so we discussed a timeline and then that became that fancy idea of a timeline interface. That was too big of a thing to include in the beige front end, so we said well let's build a prototype on the side that would talk to the real thing, the back end. So, anything you do there is

actually visible in the front end as well, and anything you do in the other front end is visible in the timeline, because they talk to the same back end, the actual data set in the back. And... yeah, so at some point it worked and then instantly everybody wanted to link it to their videos [laughing]

- REBECCA: [laughing]
- FLORIAN: ... [everybody was asking] how do I go from here to the front end and back? So we added an icon with a quick link to the video timeline interface, that's basically how it ended up being linked together. But it's still a prototype so it's got a lot of problems and it's very much tailored for that specific need at the archive and we've just started discussions around how to turn that into an actual component of the front end and how to generalize that and all these things.
- REBECCA: I discovered it really late in the process...
- FLORIAN: Well, I just added the icon a couple of weeks ago... [laughing]
- REBECCA: [Laughing] Oh, did you!
- FLORIAN: Lucky that you discovered it!
- REBECCA: [laughing] I had wondered how I managed to overlook that.
- FLORIAN: No-one saw it before
- REBECCA: I found the visualisation of the data to be really intuitive, and really ...
- FLORIAN: Yeah
- REBECCA: ... it was a lot easier to grasp what it was that I was annotating and I started to... So I could see the density of the data, which was really appealing. I found that when I was using PM2 with the list format I had difficulty trying to... piece together or visualise a hierarchy of information, which for me felt important. So if I had a movement phrase and I wanted to draw attention to something that was happening in there and something that was happening in there, in this list format... things were getting lost and so I would annotate the same things again and again, until I started to become really familiar with material. So there was this really interesting awareness that I develop of the kind of information I was looking at and wanting to annotate and how it was really making sense on the timeline So when I discovered the clock icon I was like "oooh... ah" [laughing]... that makes sense!
- FLORIAN: [laughing] Ooooh... and no-one told you about the tiny icon in the corner...!
- REBECCA: And it was really appealing, actually, really appealing...
- FLORIAN: Yeah, that's the future really. We have so many... we have to do a full re-write of that all that front end code. It's gone through, I think, at least three hands now and very diverse backgrounds of coding and diverse background of ideas, what this tool should do.
- REBECCA: Uh-huh
- FLORIAN: So, everybody goes "Oh, don't do a re-write", but I think for us it's the only way forward...
- REBECCA: So, they had different views within the company about what the tool should do? Or the coders?
- FLORIAN: No, the developers, the coders. So it was not always easy to... for example, students working on the project from the code side had to fulfil a specific task. So... we need an interface to annotate videos until September and then they would go and do that [gesturing] and at some point, it's finished, the student is gone, no-one knew where, and you're like "okay cool, so can we get in touch with them?" "Well, he's on a leave now, or he's doing some internship somewhere else" [Laughing] "Why?? Why??", something like that. That's not actually what happened but, you know, that's how those things go, and then they're not being paid anymore and it's really hard to ask someone like that for extra hours on a project that's not his project fully and so... But we ended up with, sort of, their perspectives of what annotation was, so what we were initially trying to get away from was back to thinking around one video perspective, not multiple videos and all those things, so... stuff needing to be local and so... not fully attached to our backend and so forth. So we worked that into other versions and people helped and so step by step this thing grew into this huge monster [laughing] that no-one really wants to...
- REBECCA: [Laughing] Wants to touch?
- FLORIAN: [Laughing] "Tear it down! Let's get a new one!"

That's why I invented... I'm not sure I actually invented it, but that's why I am trying to plan this idea of software archaeology already now so we don't have to deal with these old versions anymore [laughing] "We need to produce something that those people in 20 years will be able to work with... let them deal with it... maybe do a new version... so they can have the old building and we get new one". Yeah, so, it's not easily expandable the current versions... it's annoying to do bigger changes there....

- REBECCA: I guess because if you don't build something with that already in mind, it makes is more difficult to go back...
- FLORIAN: Yeah, we have needs that were never addressed at all, off-line working, for example...
- REBECCA: Yeah...
- FLORIAN: ... So, you do annotation someone else there does annotations. Or being able to work with off-line media, on the plane, on the train, somewhere else. We have a lot trouble with internet access in theatres, even if they have internet access those dark cubes can be like shields or something, so you have no internet within the stage area. So people can't use the tool. And then there's the whole aspect of how does the video get into Piecemaker, that's completely unsolved in a way. So, there are a lot of challenges waiting for us to be solved in a way that is, sort of, future proof, at least for the next two years. And, it should be easy and downloadable and a nice interface, but also an interface you can easily get into that's pragmatic and user oriented and...

- REBECCA: Why is it only on online thing?
- FLORIAN: It needed to be online because the needed to be able to share those data sets among the team. That was... our... the internal first need that we had. So I do annotations and I want every visualisation and everything that is being built at that moment to use the newest version. Before that we had text files that we would pass around and after three iterations you did not know which text file version you had, I mean the numbering being as good as it gets but still you could not tell...
- REBECCA: [laughing] Version 5.11
- FLORIAN: [laughing] "Did I give you that?" "Yes it's on the red USB stick" "The red USB stick? I lost that two weeks ago"
- REBECCA: [laughing]
- FLORIAN: "That wasn't the latest version, that was the version that prepared for that workshop." So, it was just not easy to work with. And then we switched everything from file-based data to the back end, so we have all the tools that we built to do the visualisations for the scores website, for example. And even the interactive elements on the scores website still use that back end, the same way that the beige front end does, and the same way that the timeline does and all the other tools as well. Basically they all talk to the same back end and suck out the latest data and they can actually write their own data into that as well. One change of data in the back end and everything changes instantly, so the website was updated, and everything was updated by itself, so it was way easier.
- REBECCA: Yeah, it makes sense...
- FLORIAN: So, it's always been a pretty pragmatic approach, from our perspective. Also, it looks like rocket science from the outside!
- REBECCA: [laughing] It does! To us mere mortals...
- REBECCA: [Laughing] Yes! So, can I clarify? Through APIs you have different interfaces...
- FLORIAN: Yes, we do have different interfaces. So I have, for example, a recording tool that I wrote which does multi-camera video recording with the webcams on your mac and directly writes into the backend. So, specific tools for specific needs that can use the backend and don't have to go through any of those interfaces
- REBECCA: So it's responding to the needs of whoever is using it...
- FLORIAN: Yeah

REBECCA: For whoever is requiring it...

FLORIAN: Uh-huh. So, for example in the Choreographic Coding Labs, those guys don't get to use, well they can use but they normally don't usually want to use, the web interface.

So what they do is they download... we have different libraries... plug-ins for programming languages, like Java and JavaScript mainly... and they download those libraries and get an API key, something like a log-in they can use with the libraries, and then they can talk directly to the backend and use the data for their visualisation projects, or stream data in the backend as well. It's pretty common on that level of... design work or creation, for those people to use API-based data sets. It's like a weather API or something. If you want to know the latest weather, you just query that server and talks back with data.

- REBECCA: So I noticed that... I don't know whether this is now because of the PBA timeline or whether it has always been there, maybe it was there already... but it's possible to classify the annotations, for example, call an annotation a 'note', or 'data', or comment... What is the differentiation? Is there a reason for classifying annotations?
- FLORIAN: Well, the original reason was that we needed a way to differentiate the markers that we created from each other because some of those were... so, for example, we had a test audience with us in the studio during the recordings and they had a specific task they were asked to do. Basically, mark whenever they felt they saw change. Those are different kind of marker to the annotations I did myself to link the recordings to the score, for example. And then we had annotation types for video, so video itself is an annotation, because it's a time-based item. So there are annotations for 3D data sets, for all kinds of things. So, just to be able to differentiate in real... growing large pool of annotations...
- REBECCA: So, I guess, it's at the data end, rather than... when I am looking at PM2 I am really only looking at the language markers... the categories each have their symbols to indicate what they are, but when only using the interface... there is no... I don't know why am I calling this 'data', or why I'm calling this a 'note', or a 'comment'...
- FLORIAN: Yeah, at that level it has no real meaning anymore and those types are more or less random.
- REBECCA: Right,
- FLORIAN: [Laughing] So they were a two second decision at a point when someone made the tool. "What kind of marker types might show up? Okay, let's say scene, comment, marker, note, err... what else...? Video? Okay. That's it?", "Yeah, that's it". Boom!" And then it was done.

We always wanted to make that expandable and more meaningful so they could fulfil other purposes, but It never came up as something we *needed* instantly right away so it never happened. But it's still in discussion and we're still using it. So we're using different types for different information, but not really in that interface. It allows you to differentiate for yourself if you can make use of any of those classifications.

REBECCA: Yes, I think... initially... for just the annotation marker it doesn't make so much sense, but when you look at the markers in the timeline, its visualisation, then the different colours really work. However, the version I am working with can't import the video so then, actually, there's no temporal relationship, and then those classifications don't really mean anything anymore.

- FLORIAN: I think the most needed update would be a... filtering and sorting and searching interface for the markers so that you can say "show me only annotations that are comments and are created by that user", for example. So you could limit the amount of annotations that you see.
- REBECCA: Did you have that on the Deborah Hay one? I seem to remember a track underneath...
- FLORIAN: Uh-huh. We had some form of filtering there, but it didn't end up with that interface. The

Deborah Hay interface was sort of Piecemaker one and a half [laughing], because it was a hacked version of David's Piecemaker1 that I hacked an API into so that we could build our own front ends without having to do that front end work inside of his software. So, basically, we added an API and then that API allowed us to use our software tools to talk to his Piecemaker version.

- REBECCA: *Ok, that makes sense*
- FLORIAN: It's sort of.... what's the word...?
- REBECCA: Predecessor?
- FLORIAN: Yeah, predecessor maybe. Something like that... Predator? [laughing]
- REBECCA: [Laughing] Yeah! It's a predator!
- FLORIAN: [Laughing] Of the API we are now using.
- REBECCA: That makes sense. So, thinking about your own practice...Why are you interested in annotation?
- FLORIAN: [laughs]
- REBECCA: [Laughing] Actually, are you interested in annotation?
- FLORIAN: [laughs]
- REBECCA: What you do you feel annotation offers or reveals? I am thinking a lot about the difference between the process of annotating and the product of annotating, and what they offer... If I am annotating something that process is very different to when I am engaging with already created annotations...
- FLORIAN: I think annotation is a tool.... at various levels. It's a tool for thinking. We talked a little bit [before the start of the interview] about the different approaches you can use that help you think around process-based... in this case art, but it could also be other processes. So, how do you cope with.... the problem of... well, *our* problem with time... We have not such a... clear and good and rigid memory of time in the same way we have for locations, for example. So we have a very clear idea of our surroundings and how things are mapped out around us, streets and distances and all these things, but with time it is very different. It's very dependent on your own state and dependent on your perspective.... things play into your memory of things... so it helps, annotation helps... looking into these processes.... I like to compare it to drawing... you will look

at something three-dimensional through drawing on paper, it helps to clarify specific patterns and specific traces. Sometimes it not only about putting the correct line but it's about being able to search for a line already there that helps you find and understand the form. It's not only about finding and making the correct image, but it's also about being able to have a tool to search for that and then through that being able to see that form... Those things I see in annotation, but in relation to time as much as it is in relation to form. And I think that's quite interesting and... with my own background and maybe ... I'm just, sort of, schizophrenically hallucinating or something, [laughs]... but with my own interest and background in drawing that's something that appeals to me quite a lot. And I feel it's not something that has been looked into artistically... very much. So it's interesting for me from an artistic perspective and it's a technical challenge as well. It has all those attributes that I like in my projects. And then I see how helpful it is for all these research questions and artistic questions that come out of dance and the dance field, that come out of performing those pieces and out of choreographic thinking. So, it's not only my own interest but other people's interests as well. So I feel that it's a very interesting field to look at and work with.

- REBECCA: I agree. As a Labanotator... so I am used to seeing movement, breaking it down, deconstructing, and translating it onto a page. And I realised that when I started annotating that the visual representation was already there, so it's [annotation] the process of augmentation rather than translation. What I became really clear of was that I not annotating what I know or the things I could see or identify, but the things I was having problems with, or the things that were complex, or things I had to try to... problem-solve or something, these things I wouldn't necessarily be looking at if I was notating.
- FLORIAN: So, one thing I ran into at some point talking about annotation with Scott [deLahunta] is that I felt... I realised you could basically turn everything into a process also. So, it's not only the process there, or the recording of something and then annotate, it is also something that needs this kind of material. So, when looking at the world from an annotator's perspective you tend to start thinking about things in terms of how I can turn that into a process. That is actually something you can do with everything. So, get a video camera and walk around a stone sculpture and you video tape it and then all of a sudden you have something time-based. So you can turn from perceiving things as static things but then turning those things into a process and involving yourself in that process is quite interesting, artistically as well. And that gives hand to annotation as well but also it is sort of a need of the annotator, similar to people that would do... field drawings or landscape painting or something, that would go out with their tripods and, you know, canvases and wander around looking for a scenic place and then set the stuff up and start painting. Or as a photographer, you know, it's quite obvious for photographers to wander around and look at things from a photographer's perspective, so I have become interested in this perspective of the annotator and ideas like ... well, we have these calibration markers that we came up with for doing the performance recordings and, at some point, I felt it would be interesting to look into how one could leave more calibration markers in everyday life, So, wearing something like a clock that would always, you know, show a local position and time so whenever you are being photographed or videotaped...

REBECCA: You would have a timestamp...

- FLORIAN: ...a timestamp that would allow you to synchronise that with other streams of media. So... and actually, we're annotating all the time. So, we're tweeting, we're doing business over smart phones, all those things leave time stamps with small data packages, so we create a lot of annotations without knowing, time-based annotation without knowing. It is already there in a way. That's also interesting, how would you fold that back into an actual annotation process...
- REBECCA: Yeah
- FLORIAN: So, once I started to look into it and think about it more and that's always what happens, when you start to do that. You know, you want to buy a red car you only see red cars after a while.... So you find annotation everywhere.
- REBECCA: I am thinking about what it means to annotate the live choreographic process. If the performance, or the choreographic work, or the rehearsal is a live document you could add verbal annotations or you might use a choreographic sketchbook. But they don't have that tangible aspect. If it's verbal it disappears along with the dance, if it's a choreographic sketchbook then there's no time stamp associated with it. So I am starting to think about the annotation as... the role it has for the annotator, is far greater in terms of developing their perception than the mark that it left behind...
- FLORIAN: So, sketchbooks. I would say let's just film the sketchbooks. You know, do visual or text-based annotations but just film that.
- REBECCA: You mentioned...
- FLORIAN: Those are all interface ideas that we have already started thinking about and it's sketched out... I was looking, or I was remembering looking, at the Hay's assistant when we did the recording [for *No Time to Fly*] sitting where the audience sits, second row with a MacBook on her knees and she would type into word, or text edit, or something, and she would write down whatever was happening or what was said, whatever she felt would be important. I just... I'm not sure whether back then, or remembering that I was thinking whenever she did a new line we could record just that line in time, and then we would already have a set of annotations and that gave the idea for that live annotation tool, So, it's just basically a text field where you write and once you create a new paragraph it would store that next paragraph whenever you start typing again. And you get a small timestamp. So, while you're just noting down things it creates a set of annotations in time without you having to say, "here is the annotation, this is the text, it's this type, store it please". So, it's a lot of work actually. That's completely removed you're just typing.
- REBECCA: Yeah
- FLORIAN: And that's all you need to do.
- REBECCA: The last time we met here in Frankfurt you mentioned that you really would love to film the annotations people make... I think we might have been talking about drawing, just on paper... And you suggested that that would give some sense of time... that it would provide another dimension to their understanding. It is a different way of accessing information beyond the final form, but there is an understanding of where it leads to or where it came from. It's something that... in Dance Pro, the earlier

prototype version, they retained the gesture of annotating, so if you were drawing on top video then the drawing would remain and you could see that unfold, but in the most recent version the annotation is presented as one final block, which seems to lose the contextualisation in space of what the user is doing.

- FLORIAN: Uh-huh. Did you see the.... What was Zack's...
- REBECCA: Rotosketch?
- FLORIAN: Yeah. Did you see the video where he presents it?
- REBECCA: I haven't seen it.
- FLORIAN: No? We have it. [starts looking for videos]
- REBECCA: Excellent
- FLORIAN: I will mail it. He, Zack, made a new version at the first CCL...
- REBECCA: Did he?
- FLORIAN: Yeah, and that's the one he presented at the end of the end of that CCL.
- REBECCA: Are the CCL's still running?
- FLORIAN: Yes, the next one is in Amsterdam.
- REBECCA: I came to the one in New York and what really struck me was the discussion of trackable qualities and the different perspective or the different language that we are being used by dancers, the creative coders... is that something that comes up a fair bit?
- FLORIAN: Uh-huh. Well, it's a specific kind of breed of people that we end up inviting. There is a selection process. We try to help them *see* those things and once they get in touch with those ideas by themselves they are normally interested. Normally they're curious.
- REBECCA: You were saying that you had very little contact with contemporary dance before. I was wondering if you are able to put into words if and how the annotation process has changed your way of thinking or... understanding movement?... You were saying that you can now start to feel when things are happening, like the transference of energies, do you think you feel more of an embodiment of movement?
- FLORIAN: Well, I think it points to... one of the failures of our education system in that there are things that it is not able to provide a basis for, so for me... maybe it sounds naive, but in retrospect that is how it felt... I could compare it to someone hearing jazz, for example. For the first time, they would feel it was just random notes, so they're not at the level or the stage of being able to hear it, yet. That's sort of where I was before the project, I think. So I was looking at dance and it felt like strange, more or less, random movement because I was lacking the background. So, initially I was not looking at the movement at all. I was more interested in the ideas and those ideas

helped me then look into the movement. So, through discovering, through reading and talking to Deborah and the dancers about what they're trying to do and what they're interested in, and just hearing them talk about what they do would get me interested in their artistic perspective and the ideas and methods they work with and relate those to my own ideas and methods. And then we had a common ground and that completely changed my picture of what I was looking at.

- REBECCA: A process of becoming less distant from...
- FLORIAN: It's like, when you taste wine for the first time you cannot really differentiate between the good and bad wine. Or the same with cheese, or chocolate, whatever. So you need a specific amount of contact with those things before you can actually start to differentiate more finely or more precisely, and we don't have any good foundation for that, so it's just not there. So we do dance classes at school, but those are traditional and social dance, or something like that. And actually, I had a couple of years of eurhythmics training so I should be prepped but I wasn't. And then not having that means you would need someone to mentor you or someone else being interested who would help you into that, like your father who likes jazz and plays stuff for you and tells you what is interesting and then all of a sudden you start seeing that, or hearing that. So, you would need a mentor, and I just did not run into anybody before. I mean, I knew Bill actually but...
- REBECCA: You knew Bill before...?
- FLORIAN: I mean, not well, but I knew who he was and I has met him, I think. Because he had been doing stuff with my former professor through the school already, so they knew each other. That's how the school got linked into the project. But I did not end up really seeing much of his work.
- REBECCA: Yeah. It is interesting because even with my background in seeing and analysing dance when I first see a choreographic work, sitting down to annotate it, it suddenly seems way too much without any.... I'm able to see it and understand what's going on but it is hard in the beginning to piece together what is happening. But then through annotating and through analysing it becomes clearer and easier to see.

Can I ask you about the DOPODO, the digital documentation project? Scott [deLahunta] sent me the document describing, or introducing the project the different interfaces, videoing and analysing the work I wanted to ask... has there been much interest? And what do you envisage doing with the videos and the data?

- FLORIAN: We ended up with that project as service provider for digital documentation. We're still in the process of finding out what we are actually going to do. So no work has been done so far, so we are just about to start. The document you've seen is... Something we did for the partners to understand what we are doing. It has started as a project but *our* part has not started because we're still trying to find out what our role is. We're still talking about what people would want from us and what's possible.
- REBECCA: What does DOPODO stand for? Digital...
- FLORIAN: Dance on, pass on, dream on.

It's about age and movement. So it's about aging dancers, but it's also about movement and people, and everything in between. So a medical perspective, physical perspective, artistic perspective... choreographers making pieces for older dancers, forty plus dancers. So the Dance Ensemble in Berlin is an ensemble that is already performing. Dancers in their second career... someone said it's the dancers can't stop

- REBECCA: And shouldn't stop...
- FLORIAN: So that's the setting and it's interesting from a lot of perspectives. And we offered to be help with documenting processes and everything and....
- REBECCA: Documenting and annotating?
- FLORIAN: Not doing the annotation. Helping them to use our tools. No annotation. That's something you can't do. I cannot do the drawing or painting for an artist, that is something he needs to do for himself. I don't know what his or her question is, so I cannot do the annotation for that. No, the idea is to let them use our tools, but then ideas grew and grew and grew... It's still in the stage of growing and shrinking and growing.
- REBECCA: I have become interested in how dance performs on-line in the sense it is often very difficult to find the content you're looking for because of the kind of the metadata or the videos are badly annotated. I am really interested in how these annotation processes might afford better access to on-line content. With my limited technical or computational understanding these annotations [PM2] that are attached to video, well they are separate layers, but can they be used to support interoperability, searches for content according to those annotations?
- FLORIAN: Yeah... It's like searching YouTube comments, basically. So, they are completely separate.

You don't need the video for that level of access. But what does the annotation mean out of context? So, in a way, you just find that text you need a way of understanding what the person looked at. So, it's not as trivial as a text-based search. So one thing we've been discussing is how to look at the last forty years almost of archiving dance...

- REBECCA: 40?
- FLORIAN: 40 years. Because that's, in a way, it's a black hole of dance documentation, because you have all these different formats that were used. So, coming out of film, and film's rather stable as a material. So film normally doesn't degrade as fast as a VHS tape, for example. And then technology ran through all these stages of media that would be more and more unstable with every layer and with every generation that came about, the worse being those self-burn DVDs that have a life span of five years before they start having holes and the DVD cannot be reconstructed easily. So, one question we've been looking into is how annotation could help.... digitising and making use of those 40 years of video that we're looking at.

You could also ask about YouTube, which is a much larger collection. How do you cope with this diversity of material and this diversity of quality? So one hope, at the moment, is all those learning systems, artificial intelligence, all that stuff that is emerging at the moment. It's very interesting. Most of those systems need training

beforehand, and so of them many need substantial training beforehand, and that's where annotation might be useful, to help provide training layers that would then would be able to be used computationally to automatically label things, and then for people to be able to find those and fine-tune those. So we could revive those archives slowly. So for the Pina Bausch Foundation they have already digitised all their material so it's all filed now ... and they have a huge database and it's very diverse material and that would be one nicely self-contained blob of data. Bill's archive would be interesting, but it needs interest from within the company or the institution that holds the data, but I'm not seeing that at the moment from there. But then, there are many other companies that solidly used video throughout the last years, which decays. So, I think it's a huge market, in quotes, or a huge task, but it needs to be looked at, otherwise this stuff will just vanish. And that's one thing that I feel is something we will be working on in the future.

Another aspect is something that came up through discussions with Liz Waterhouse around her annotation of the [Forsythe's] duo, and looking at those old Piecemaker recordings and other materials in Piecemaker. She would all of a sudden realise that she recognises movement somewhere else in a video she has never seen before that she felt a friend of hers invented, but she now realises that it is something that must have been passed on somewhere, or someway, and she said people do not care too much about passing on the heritage of movements and techniques and all of these things, rather they would just pass on the movement by itself or take on movement from someone else where they see it. So being able to allow for those traces to emerge again would be quite interesting, and would be quite eye-opening in a way, also for the dance field. She said it ... really surprises her from time to time, that to find specific things somewhere else where she was completely sure it came from someone else so... I'm not sure if it's actually helping, but it's still interesting to look at. I'm not sure if the field actually wants that. I think there's this directness and quickness and un-relatedness allows for very fast change cycles and passing on because you don't have to take the full luggage with you... So, I think the field is not really asking for heritage of movements, but still I think it is quite interesting to see how these things... where they move and how they move, and all these things.

- REBECCA: That's really interesting... I recall that Franz Anton Cramer writes that dance has these grand narratives that are passed on, canons, and understandings but there are so many significant contributions that don't get caught up in that net because there is not the documentation, or things have been passed from body to body without recognition of where it came from... The "alternative histories" are interesting to consider. It is really interesting to come across a letter, for example, that changes what you understand, but it has been buried away in the archives for so long and no-one has read this letter... I think you're right about the passing on. There is not so much of an urgency to recognise that, rather there is more thinking about the present and what is next, rather than looking back....
- FLORIAN: ... and it allows for a very lightweight repetition and trends moving through the dance field and that is something that the field itself enjoys a lot and works with also...

And then, on the other hand, learning from the discussions we are now having and have had around recordings and people not wanting recordings of their performances being shared or openly accessible because they would feel that it's not the perfect recording, or that day not was not a good day, or this strange need to, in a way, not to leave traces also... So that's another problem that we're tackling... the rights issue, but also the question of accessibility. So we are discussing the 'Dance Data Network' between Australia, England and Mainz Germany, sort of as hubs holding the same data sets so that you don't have to travel to Australia to access something that has been recorded and only accessible there, for example, you could also get access in Germany and in the UK.

REBECCA: Which is really needed

- FLORIAN: Right... So, in a way, being able to allow for such a setting to work but then not having that only as one specific location on the globe, but rather a couple of locations. You have a joint agreement about who can access what and then people would able to come to Mainz to study Pina Bausch, for example. But they can also go to Melbourne, or maybe New York, so that network could grow. So it is a question of accessibility and, on the other hand, it is a question of how do we do research with those data sets. What we continuously keeping seeing is that every research project sets out to record the next big data set, but instead of sharing those and having a common ground of data sets that we can all work with, we have to re-record every time because things cannot be shared. So you clutch onto your own recordings and your own data sets that you already have and try to make them grow but it's just stupid, so we should find ways to share those data sets and then have accessibility to a diversity of data sets. And that's sort of what that network tries to solve.
- REBECCA: Especially, now we are becoming all too aware of the issues concerning IPR and accessibility of archival footage where they are locked down by institutions. We are now in this age that we understand the issues involved, the restrictions...
- FLORIAN: It's a question of rights. And those rights are with the performer, the light artist, the musician, the scene designer. Sometimes it's rights that sit within where the recording was done, so you have the specific theatre, you have the camera man, and then sometimes it's the funding. So that is already a lot of people, so you would need to get consent from all these people about how this can be shared and if you don't do that beforehand then you end up with, let's say, 50 recordings that would not have seven people involved but they would have 50 people involved. So, looking at four years of recording around Pina Bausch, many of those recordings are unclear in terms of where they have been recorded and in which situation they have been recorded. It could have been rehearsal videos which is an even more unclear setting because you're not explicitly asking permission to do that with everybody in the studio. You're, sort of, "Can I do some video"; "yeah sure, no problem" and then 20 years later you don't want yourself being on that video so you sue and then, you know, and there's no way of funding that beforehand so... and then people change their mind... so when all the people from the former Forsythe company left, the dancers, I think not everyone was super happy about how this whole thing happened. So people might change their perspective on those recordings through changes of their situation. Not everybody has a new position, for example, and people are frustrated. Those things happen. Sure those things happened here but those things happen every day, probably. Or you get into a fight with your choreographer or other dancers, or something else, so... you withdraw your permission and then you basically eradicate the accessibility of a whole data set just by one step. That's really hard to cope with. And then there's different countries, different situations for rights, and all of that. So it is super complicated. So the easiest thing always is to say, "don't share". So, it is a

recording just for you and your research but you cannot share it. You can share a screenshot but that's it, nothing on-line. So that is the easiest, and no-one needs to deal with it any longer... so that is what is happening all of the time because people don't want to get into that solving it beforehand. So it is not being solved beforehand and then you end up with a mess afterwards.

- REBECCA: This data network that you are helping to shape between Coventry....
- FLORIAN: Coventry, Deakin, and...
- REBECCA: How is that working, are you starting from discussions, or putting a framework in that allows... knowing from the start that these are the permission you need to get....
- FLORIAN: Well, we are not yet at the data level... we are at the political level. So, we are planning the idea and it's falling on... very....
- REBECCA: It's off to a good start?
- FLORIAN: Yes, how do you say? It's falling on the ground that's quick... So it's German ...
- REBECCA: Laying the groundwork?
- FLORIAN: No, it's like soil. It's like a petri dish or something, So, as we say, we are running into open doors... Trying to bang on the open doors [laughing]
- REBECCA: [Laughing] But they are already open...
- FLORIAN: [Laughing]... but they are already open so it is like fighting windows... It looks quite good and everyone's interested in getting that shaped... Once we're, once we have an agreement and a sketch, a conceptual sketch for what it is, we need to find money and then we need to see how that gets set up and then we can see how that works.

But it's setting out to be expandable so other projects can join, they can build their own notes and they can seed into... maybe there's differentiation between access points and seeding points so it could be something like the Pina Bausch Foundation where only their material would be accessible at their node but they would seed their content into the network so it would be accessible also at other nodes, so basically they don't have to deal with people coming to them in Wuppertal to look at Australian dance, for example. Because not everybody can provide that level of access. But they could provide access to their own material and then their own material could become part of the network and be accessible.

And then, it is also about long-term storage. It is extremely expensive, I have found out just recently. To deal with just the recordings we already have within Motion Bank, storing those for ten years is expensive and if you extrapolate with systems getting better and more recordings being done, and that whole process speeding up, then the amount of data will grow rapidly, so we need to cope with that right away, otherwise at some point we have to stop doing those things because no-one can pay for it. With the background of Artificial Intelligence it's also interesting to have the data in a cloud-based network because then you can have cloud-based services analysing that rather than local files somewhere. So, it is just impossible to set up a system that would be possible to process something in my studio, for example. I would need to install servers, and networks... This would be highly expensive. But with cloud computing ...the infrastructure is already there, but then the data needs to cloud-based as well. Or it needs to put in and results harvested from the cloud so... the closer we can get that data to the cloud the better.

[Laughing] Rain down, rainbows of information for us...

REBECCA: [Laughing]

So we have spoken about... time-based annotations. When I was annotating it became apparent that there is a clear temporal relationship between the annotation and the video content, but.... there is not a clear spatial association... What your thoughts are on spatial annotations? So, almost tagging the information in time and space. I might be wrong but my understanding is that there is not the intelligence from the computational side for recognising moving images or images full stop... and so the process of spatially annotating data or moving images might improve the process of recognition of moving content?

- FLORIAN: Right, but given that you need a million annotated images to do a training, a proper training, that not something you could easily get of any system. We looked into that but it's not part of our front end at the moment. It is something that we have done for specific needs but it's not, at the moment, part of Piecemaker2.
- REBECCA: The complexity of moving image, so actually....
- FLORIAN: ... and it's ambiguous so... many poses could be read from
- REBECCA: ...multiple
- FLORIAN: ... multiple perspectives. So you cannot tell the dimensional order of things easily. What I think is going to happen is video recording is super cheap and, actually, multiangle video recordings are super cheap nowadays as well. So that's already sort of synchronised in a way so you have high frame rates. GoPro, for example, can do 60 frames per second or a hundred and twenty frames per second easily at full HD so... I think most dance companies would be able to afford three or four GoPros and easily set those up. They are tiny and you just do your recordings. And then I think at the computational level we're pretty close to being able to synth that into a 3D perspective of things so that you can take in multiple angles and understand what happens three-dimensionally... There are already tools for that but they need more cameras at the moment. But I think that's going to get better and faster and at some point we will have a very cheap way of distilling movement from them in 3D tracks... Once that happens we're in a totally different world, because then it will no longer be annotating video, it's going to be annotating 3D data and then it's we're going to be somewhere close to moving skeletons you know what Kinect can do nowadays, for example, simplified 3D skeletons type data sets those are going to get finer so we're sort of in a transitional...

REBECCA: Phase

- FLORIAN: It still needs us to do... big chunks of the work that is easy to do, but for the fine-tuning of annotations and the subtle movement, that is something that would need more of a body to understand... those will need us as well. And that's something we see with many recognition systems. They are getting really good at getting to a solid general recognition, but for a very fine or specialised things... they are not self-learning so they cannot specialise into those fields, and no one is interested in specialising into those fields because they are super tiny areas, non-profitable... they are not generating a lot of profit so it's not interesting.... It's going to be a mix of us and machines...
- REBECCA: So, we won't be turfed out on the sidewalk...
- FLORIAN: I mean, there are many things that could happen and I am not sure we need to look at one specific video angle, for example. Once we're into high density... that shift perspectives... that would help us a lot to see better... that would help with annotation a lot... being able to better zoom in or, rotate around the performer... these kind of perspectives that are not possible at the moment. Still, then if that comes in 10 years we will be looking at 50 years of 2D images on timelines and we need to cope with backlog as well. So that's something we can look into right away. So all the future musings are great and we should prepare for that to happen we still cope with what we are having now and work on today's problems as well.
- REBECCA: 40 years of video work....

So... have you been closely involved with the Pina Bausch Foundation?

- FLORIAN: They have a special video streaming server that we help them set up that allows them to use their own restricted access video footage in house with our Piecemaker2. So they can annotate in-house with our on-line version on their in-house materials and they have already done that and they are now starting to use the timeline interface to go deeper into that process because they felt that the list-style text-based perspective is too cumbersome for them to do larger amounts of work. And so that's something that is happening, we are in close discussion about the timeline. But that's just one project we're doing with them. So we are in close contact with the Hochschule who did their database system... and the ontology, so we feel that having our annotation system or... I think we never spoke about Piecemeta...?
- REBECCA: No....
- FLORIAN: Well, we have, sort of, servers for data. You can think of it as something similar to a video streaming service, but not for video but for values so... data, recordings of movement for example, MoCap data, or movement data... so, value sets, data sets of numbers, that where we store our movement data...

REBECCA: In Piece...?

FLORIAN: Meta. Piecemeta. Right! It was funny in the moment when Anton came up with the name... [Laughing]*"So there is Piecemaker and then Piecemeta, haha!"* Now we're sticking with that, so basically at some point this is probably going to join...

- REBECCA: Piecemaker and Piecemeta...?
- FLORIAN: Yes, Piecemaker and Piecemeta are going to be one system. I think maybe the next system will probably be that. To work on Piecemaker1 and the migration of Motion Bank. Anton wrote Piecemeta during the first CCL also.
- REBECCA: *Oh great!*
- FLORIAN: So it is a CCL outcome and since then he has been in close contact with us and he's been constantly working on Piecemeta, and so Piecemaker and Piecemeta are going to join at some point. Then we have Pina Bausch linked-data archive, which is dealing with actually storing content in terms of video files, or scans, or these kind of things, so assets basically, and linking those things together. So they have a linked annotation base on top with an ontology that tries to model all the relations within that pool of materials... and then we have our system again, MoSys, to publish out of collections of data. So we have, annotating, recording data, making collections of ... archiving and creating collections of materials, and then you have a system to publish that. So, we feel that this is actually a very concise... or a very obvious link between those systems ... it fills that gap that we have at the moment, we are dealing with contextual... or helping record materials, but we are not dealing with relations within the material or storing any of the material. But then we help working from those pools, help publish stuff, and so we're looking into finding a way to turn that into a package, not a package in terms of one installer and then you have it all, but a way of thinking of that as a chain of tools that perfectly work together.
- REBECCA: Is this envisaged as an online score... similar to...
- FLORIAN: Right, that is what drives the online scores, the MoSys thing is what drive the scores... Have you seen MoSys?
- REBECCA: No, I don't think so...
- FLORIAN: It's Motion Bank System [laughing] It's called MoSys because it's sort of a funny reference to one of David Kern's... presentations where he always shows Moses coming down from the hill with, I not sure if it's 13 plates or something?... He drops some of the plates and then all of that information is lost. So that's what he gives as an introduction as to why it's important to make sure that you are keeping the notes... find way to keep notes around the rehearsals and what happens, do not lose the material just because people walk away and it's lost. So, being able to point at specific things in the video and draw from all the knowledge that is there during the recording of the video and maybe shortly after... the knowledge that starts to dissolve in the moment that people leave the room. So, that's the picture he used... We came up with MoSys at some point, so it's Motion Bank Systems and it's basically a back end that allows you to arrange those cells that you see as the front end on the online scores...
- REBECCA: I think you showed that at the CCL where you can essentially... someone can go in and change the slides that the score is made up of?
- FLORIAN: Right, yes. And it sits on top of a pool of materials, something that we manually added to our system. But actually it's way smarter if that pool of materials comes from

another system. So what we did, for example, is that we linked in YouTube, so you have a search field and you go 'Forsythe' and then would see all the Forsythe videos and you can just drag them into the grid, resize them, arrange them, put text next to them, and have other videos live next to it, and then all of a sudden it is easy to do a mood board around a specific movement, or a mood board around something that happened. So you can start to draw from that material and really easily, like post-its, arrange stuff and build a story. And that's something that we already attached to the Pina Bausch database, you can query for information in the database, you can see all the films, all the performers, all the dresses, and then you can build... you could model an exhibition, you could model a catalogue, you could model a website model, or something else, or even just around a specific performer, or a specific location, or time, or something. So all of a sudden that material is there to actually work with... and to create outputs. We felt it's just obvious that this should be linked and that is something that we're now trying out as... sometimes we call it research desks, sometimes just the interface for their database.

- REBECCA: The publications, or outputs, would that be something that is then available online for people to access and, of course... will be private where it needs to...
- FLORIAN: Well, at the moment it is internally as none of the content is shared. So we could publish it online but it's [laughs]
- REBECCA: [laughs] but you couldn't see anything!
- FLORIAN: [Laughing] It's like a catalogue without pictures, that would be quite strange...

So, no, it would be internal, and there are a lot of questions with that. One thing that it addresses is researchers going to Wuppertal to look at material, but how can it be facilitated so that they can leave traces, for example. How can they, how can you profit and understand what people are actually interested in and what they do with the material and how can that leave traces. From a technical perspective, it's interesting if you have something like a pin board and all the material, and your job is to work through the material and, by pinning and arranging materials, you start relating things... So, there is a set of relations that have been built, so what are those relations? What is it that is actually put together? So, closeness. It's like neighbours moving in houses or apartments next to each other... and actually just being with the same pin board gives you some kind of a relation that is interesting to look at. Some what kinds of patterns emerge out of that, for example? Is there a specific relation between performers, locations, dresses, recordings of performances, so...?

- REBECCA: See different patterns...
- FLORIAN: Yeah. And that is not something that you can easily model...
- REBECCA: No...
- FLORIAN: ...with any ontology because it might be too specific from a point of view. But it is highly interesting to keep because there might be relations or patterns in there that are really meaningful that you just cannot articulate and you haven't seen them. But then if they just build something and it's in their own PowerPoint and you never get

to see it, it is impossible to relate back to the database and that would be lost. So we're trying to help with both perspectives.

- REBECCA: Do you think that there ... their database, or their work, will become part of the Dance Network Data?
- FLORIAN: We haven't specifically discussed that. They know that we're planning that and... they have people working on the database system itself, and with the ontologies. But all those things are ideas...
- REBECCA: The Zurich University of the Arts are using Piecemaker2 as well?
- FLORIAN: Mmm...
- REBECCA: They have a different interface...?
- FLORIAN: We've been approached by them because they are interested in... video-based research and... we discussed ideas around that. They wanted to have an application for working on a system that would allow them to create publications, proper research publications from video-based research, basically. Normally this [research outputs] would be a text with a screenshot, so how can artists join the canon of discussion around specific topics if all they have is video and not text. So why does everything need to be text? And that's a problem because many people are not used to writing that kind of text... for journals or whatever. So that's the setting. But, at that point in time I wasn't in Mainz so we could not formally join the process so we proposed that part of our team from Vienna could join the project and help the people in Zurich develop an idea around what notation what might do for them...
- REBECCA: Notation?
- FLORIAN: Annotation, sorry [laughs]. What annotation might do for them and... they started to work on something like an offline Piecemaker that's called Research Video. Have you seen that?
- REBECCA: I've seen the... I have visited the website ... it has different...
- FLORIAN: Right, so it's an offline annotation tool with a timeline based around the idea of one local file, at the moment. But it's already set up in a way that it is, coming from using the Piecemaker API as a blueprint, so it has the same data model underneath, and it should be easy to link to our backend at some point. And they are now looking into attaching that to the... they have a documentation system for the final projects of the Bachelors and Masters programmes that do database work... So I think they are working on attaching that annotation system to their internal system so that students can start annotating their final projects.

So it's not directly Piecemaker that they are using. So, RV is for Research Video and that's the title that they gave that project. And Martin working on that project, Martin wrote large chunks of the online scores front end as we call it, so what we see online now... that front end is mainly Martin's work. He was helping throughout the last six weeks, possible more. The hot phrase close to the end of phrase one of Motion Bank.

- REBECCA: Have you had, following the Motion Bank and the creation of the score, have you had much contact form the artists involved? About how they are using the scores...?
- FLORIAN: So, Jonathan and Matteo, it slowed down a bit. They came back and asked us to do more recordings and adding more material, the new pieces that they have done. So, we did a recording in summer 2014, or something, in Frankfurt, where they performed a new piece. I think it was a new piece. So that's why it was 7 plus one duets.
- REBECCA: Yes, I saw that!
- FLORIAN: It used to be *Seven Duets* and after phase one they wanted to add another. What they keep saying is that they go back regularly to look at their own pieces and refer people there to see their pieces, and because we also have the scorebook. They feel that it's a very nice way of showing what they do. In the end, those animations that we did for them and that approach did not work at all for me. I feel it's a valid attempt but it's not something that really works.
- REBECCA: Yeah
- FLORIAN: They don't get it, we don't really get it.
- REBECCA: [laughs]
- FLORIAN: It's funny to look at but I don't think is so super important in terms of the whole Motion Bank thing
- REBECCA: I think the concepts behind it is really interesting...
- FLORIAN: Yeah... so, what happened is that we had trouble... we ran out of time and we were quite late for working with John and Matteo. And then we did fixate of the aspect of patterns and, after two years of discussing it with them, they kind of withdrew that aspect from being the front most aspect that we would look into. So we had to think of a new way of working with the patterning so we looked into how those patterns would manifest and sort of this aspect of co-play and patterns, and finding patterns, and using patterns. But then we were in the final phase of the overall Motion Bank project. Scott was away for half a year during that time... He was working on Wayne's exhibition also, but after that he could not leave, I think. For us, it was a complicated situation because then we did not have enough people to work on it. In the end it did not get the attention it would have needed to become what we felt it might become. So now it's quite diverse. It actually has the handwriting of different people in there, so it's Amin's and Matthias's, who did more of those 2D graphic things, not the animals but the hands and the rockets and those things. And my perspective with one of those polygonal dancers and more of the generative aspects and... this patterning of random on YouTube which was already a reflection of my interest in annotating random videos on YouTube. At some point I started annotating YouTube material for patterns and felt that it generated interesting patterns. But, it [Seven Duets] has too many artistic... perspectives and in a way, all of this did not really produce a clear picture, I think. But they... they said, "yeah great, let's do, looks nice, haha, funny animals" and then went online when it was finally published they were like "Yeah, I don't really see myself in there". I was like "Tell me a week earlier and we would just not publish it" but now it's on there we cannot really withdraw it anymore. It's

something that we feel also, so we can understand it. And it's fine. It's a valid outcome of that project, but I feel it's not important. So, that's one thing.

I think Deborah Hay never really... I think she looked at it... but somehow, she has a different... she is sort of living in a different world. She was very positive about it and you can hear that in the interviews we did with her, but she did not really go into trying to harvest anything from it. I think the biggest outcome there is the 21 performer version that was created with the Cullberg Theatre.

- REBECCA: Did you see the work?
- FLORIAN: No, I just saw the documentation, but it's highly successful, it's very well-conceived and just premiered in Los Angeles. And we had our own rendering there with our version of the 21 versions of the three performers, so the seven versions times three, on a white background that we created for that. It is a new rendering of that so it is more nicely cut out in a way, so less glitches and high definition. They projected that alongside Amin's solo and some boards that we picked from the online score that explained a little bit of the project and the process. That was all really well conceived. I think, when someone's ready to go into that material the website is great. For someone not knowing what they are looking it is really hard, still really hard to get into. But we did not really set out to make a beginner's manual for Deborah Hay, so it's always for, to some extent, for the pre-trained eye, or mind-set in a way. So you need a level of curiosity to get into the material. I can't really comment on Thomas Hauert and Bebe Miller. I don't really have any feedback. And actually I haven't looked at the visitor number for a while... [Laughs] It's like one a month. We could go off-line and no-one would know! It's only PhDs that are looking!
- REBECCA: [Laughs]
- FLORIAN: It's an interesting question.
- REBECCA: When annotating, I became aware of the hierarchy of information...of concepts....
- FLORIAN: One thing that we... this idea of emergence... a method of annotation led me to feel that we should not put a rigid ontology for a classification system in place, but rather try to allow for that to grow out of the annotations that people do. So, at the moment it is only an idea, we don't help people *see* those patterns, but that's something I would feel we would need to do for future versions. So that it is easier for people to *see* those patterns emerge from what they do.... But... probably not offer any pre-set ontologies or classification systems. So already with the note, scene, comment, type field. I am biased as to whether this is too much pointing people into a specific perspective of annotation, maybe that needs to go as well.
- REBECCA: When I was annotating I became aware of the analytic and conceptual framework I was bringing with me from Labanotation, that would colour what I see, what I annotate... I was annotating a piece by Sasha Waltz and a piece by Ohad Naharin, but was aware that I didn't know the language they are working with and, therefore, didn't know how to go about annotating the work. I realised that the annotation process is, for me, seeing, or figuring out material, and I started to pay attention to... the spectrum of formal annotations in the sense that certain terminology I use, those idiosyncratic phrases that would not have meaning for others... terminology that no

one would know what on earth it would mean... I was interested in... well, I was thinking about interoperability and the work of annotations preforming on the web and how important the terminology could be in the annotation process. But then I realised, certainly the scale that I am annotating at, that it is perhaps not that important.

- FLORIAN: I don't think it has been done well so far, if at all. But it would be interesting, and actually for you also, to research whether that kind of aspects have yet to be dealt with in systems such as Instagram or Twitter. With Twitter, for example, you have these newspapers, paperly? So, basically, you're setting up a publication that is being auto generated around specific tags, for example, your own time line and that's published to your Twitter followers... and once it has enough content that it can be published again. I don't know, perhaps ten items that have been published as a summary of a specific perspective...
- REBECCA: So, the things I would tweet? Or my followers?
- FLORIAN: Yeah, maybe the stuff you liked, something like that. And then you can say that my paperly has been put together from the stuff that I favoured plus that have the tag processing, or dance, or something else. So, once you have ten items those will fold into one publication and then you can send those around. So they will be summarised and nicely put together. So, what I was just thinking was whether there have been any attempts made around... building a system, or just publishing... experiments around... maybe phrasing specific ideas, or summarizing specific ... moments, or perspectives with just tweets, for example. Or with just Instagram's. Where is the seed of a specific movement? Where did that came from? Those 20 tweets, or if you put those 20 tweets together... that is the feeling of a Monday morning. I don't know... So, when we talked about ontologies and how would you go about being able to, sort of ... what we do with MoSys sitting on top of assets, how could you have a system that would sit on-top of annotations that would allow you to render a specific thought, or specific classification system, or specific using annotation work that has been done before. Do you see what I mean?
- REBECCA: Not quite...
- FLORIAN: So, how could you inter-relate a pattern that you created through annotations on Sasha Waltz with a pattern I create doing annotations on Deborah Hay? Those would be totally different in terms of naming, but there might be co-relations in terms of patterning. So, how you will be able to say "actually, I would like to curate that and it has not name yet but it is a pattern that has been showing up, three times with different people. Similar patterns, kinda strange. We found a pattern, we don't have a name yet, but it's there. So we would like to keep that in place and look for other instances of that pattern".
- REBECCA: So, in a sense, it's different but similar to when you were trying to find the 21 versions of Deborah Hay...
- FLORIAN: Yeah
- REBECCA: And find something ... a correlation,

- FLORIAN: Yeah, yeah, yeah...
- REBECCA: But different works... that is really interesting...
- FLORIAN: So, in a way... thinking of annotations as just another stream, like a meta stream, but then looking at it from that perspective would also allow for thinking of annotations of annotations. So, how could you start to build relations between annotation sets and render new insights from that. And, I was just wondering whether that might happen in existing systems that have a substantial amount of content. I think, probably, there could be some research around... all those hate comments and bashing of people, or conspiracy things, for example, or ... sort of these phenomena that pop up now and then, or more in the last year...
- REBECCA: Because, you could probably see a trend of some sort...
- FLORIAN: Right. So I am pretty sure that people have started researching how similarities of specific reactions would show up and how to track those. It's probably inside Facebook, research that was never published because they use that to filter our streams or something. It is highly interesting and, I think, it shows what the importance of the annotation field as it allows a perspective that is not easy to get to through any other way...
- REBECCA: Yeah, a distant analysis of... bringing different annotations together... and you would be able to find of different annotation sets for different choreographic works, you could reveal similarities, or biases, or certain perspectives in viewing... That is really interesting, I have not thought of that, because often you look at one work.... Taxonomies and folksonomies....
- FLORIAN: Sounds like a whole of PhD... [Laughing]
- REBECCA: I found my annotation process quite... hyper-textual... jumping around throughout the work. So I watched the choreographic work through once from start to end, and then put in markers or annotations to indicate different scenes, but as I started to watch loops of movement and I became familiar with something, it would then jump me to something later, which then lead me to something that happened in the beginning. And, I realised that although the annotations are ordered temporally... they are associated with or by time and are seen in a linear formation from start to finish, my understanding of the work is... non-sequential, it's non-linear, it becomes fragmented. And I was really interested in how... something that you see at the end... it is in your mind as an anchor and you might recognise something that happened at the beginning, which leads you to something else. It's a... really wonderful, fragmented way of viewing. And somehow allowed me to see patterns and relations that I wouldn't have been able to see otherwise... If I tried to notate it from start to finish, if I tried to analyse it from start to finish.
- FLORIAN: Yeah, and that's the difference between live annotation and after the fact, after recording. It allows you to jump, which you cannot do with live annotation and... again it's what you set out to do, it is very different when you watch something to annotate it compared to go watch it to enjoy it... so, just being in that mind-set of the annotator would help you to... It kind of frees you from that audience perspective...

- REBECCA: It's really liberating...
- FLORIAN: Yes, it's really liberating. It's like having a scissor all of a sudden. And you just go "Okay, I don't care... it's about making something new" And it's personal. I think that is something else also, it's creative. And that's a big different to just viewing something. And I think that is also the beauty of something like YouTube comments that all of a sudden you can actually create, it's not just watching, it's creating and... but also, it's different to YouTube commenting where you would feel that leaving a note for something else. Here, you're talking notes for yourself, in a way...
- REBECCA: Yeah...
- FLORIAN: So, I think it's It's, sort of, tricking the mind into a specific perspective that's very helpful, to look at things differently.
- REBECCA: And that kind of... that perspective of jumping around... it's a process of familiarisation... but within your personal timing... you are not watching and trying to take in the whole thing but you jump from moment to moment according to what is most accessible at that moment. I started to realise that there is a hierarchy of things I was attending to, or that became clearer for me... based on what I was ready to see at certain moments. I guess, it is a process of going from quite generalised information to much more fine-tuned information. But, what was liberating was that it was not from start to finish, that it was.... start to add on little bits...
- FLORIAN: [Drawing] (see figure 78) Would you feel that... sort of kind of the way that we do it at the moment with the timeline... it's like a laundry line, or something. So everything is being attached to that, and that's a very rigid skeleton. [Drawing] So would you feel it's liberating to say... okay, I have this video playing here... and I don't know what's happening up here...but then you have this huge timeline... and it's actually just like open field... quite freely, sort of like with MoSys... really free. You could maybe say, okay, [drawing] up here is that drawing, and then here you would have something like that... so it becomes more of.... like an abstract painting or something ... rather than sort of this very categorised and style of putting things in time....
- REBECCA: What I feel happens with me... [drawing] (see Figure 78) is that ... if you have the video here... and the comments here... but if I was representing it in the timeline, then I would have an annotation... and then I would go to fine-tune it, and again fine tune it... and then I end up pointing to the image] with these things here.... And I have trouble visualizing this time and how this relates to that [gesturing to the diagram]. I start to become aware of extending these times... this really makes sense and at the moment this... I feel that I am building blocks... and then I extend these blocks, but it doesn't become more specific at this level... it doesn't become... perhaps I extend the duration of the applicability of the information. So, I feel that my process is a bit like this where I would love it to be like and abstract painting....
- FLORIAN: [Pointing to the image] Are those iterations or additional annotations?
- REBECCA: These are additional annotations. So, that this [pointing to the image] would be the more general thing. This is perhaps the title, and this is the more general description of the action, then this might be the next layer of information. So, it becomes one long

annotation, I guess. This is when it comes to the timeline it is difficult to visualise because there is so much information within one timestamp... I don't get a sense of duration and there's so much information there that I forget I have annotated it...

- FLORIAN: I am completely aware of that problem. This really the most brutal straight forward way of how annotations could live next to a video. Just [laughing] put them there! Bam!
- REBECCA: It feels like emails in your *Mac that you have to expand into order to get the conversation threads...*
- FLORIAN: So, we're working already on something like being able to comment on specific annotations so that those would be shifted in...
- REBECCA: Actually, what I like about PM2GO, was even just the colour-coding. It was very small, but that kind of... idiosyncratic process. I could colour something pink and I would know that pink meant this kind of information. I think that, even if that was layered here... [pointing to image]... that would... there is something about the visualisation of the information to the video content...
- FLORIAN: Yeah, it's too different... it's generally not smart to have that crack in time, navigating like this and this would go like this... [pointing to the diagram]. Yeah, absolutely. What I feel with this... [pointing to Figure 78] it would allow for a more... it would help better work out your own classifications, then you are not trying to fit things into labels or lanes, or classes. You would just bring them together, sort of lay them in way that makes sense for you, quite free...
- REBECCA: It feels more tactile and tangible...
- FLORIAN: Right, and its goes away from just being text, so you could come up with your own ways of ... things you might not be able to have a word for, but it would still... you could still click that and offer you a way of saying that this is not a triangle and this is the tent, or something. And then all of a sudden all of these would be tents and you could look only at the tents or interrelated tents and maybe those are smileys... and then all of a sudden this becomes a very different thing...
- REBECCA: And, in terms of pattern seeing then you will start to see things that are coming out just from the annotations you have created, which would be really interesting. Whether it's where you are seeing things in time in relation to the video or what...
- FLORIAN: Yeah, and you might... I don't know, you could be creative and say, 'a rectangle' and then this would be ... the dance and then, or Frankfurter, or the caterpillar, or something else. So it would allow for other ways of marking things.
- REBECCA: And it would allow for... a certain use of imagery that one might use in a sketchbook, when analysing a dance, or teaching, where you might write or identify something in a particular way and it's not about the action, or what is happening, but about the imagery that I am using, and something like that, if I has a picture of a monkey or something that would instantly recall what it is...

- FLORIAN: I think Liz... pointed me to the problem that she wanted to mark things that she felt has this feeling [drawing Figure 78] and sometimes they would have this feeling [drawing...] okay, well that's not something we can support [laughing]. But it's interesting because it is actually true, maybe... [drawing] (see Figure 79) that's sort of where it starts and maybe that's not something that has to be drawn, maybe it could also be something where you would say *"okay, here's my input mark, click on it and then you can say BOO!"* and it would give you this... [drawing] at that point in time, and then you have that recorded in time, that can layer other things, or you could move things around, so it would be more flexible also.
- REBECCA: Thank you!
- FLORIAN: Thank you!



Figure 78: Jenett's drawing contemplating the use of the PM2 timeline.



Figure 79 (above): A drawing that represents my experience of annotation. Figure 80 (below): Jenett's drawing proposing a non-linear organisation of annotation.



Appendix C: 'Dance Notation Campaign' (1957) written by John Martin for the New York Times

Below is a dance critic John Martin's *New York Times* response to the news that the Royal Ballet Company had adopted BMN.

Some materials have been removed from this thesis due to Third Party Copyright and confidentiality considerations. 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.

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Appendix D: Dance Pro—Usability and Technical Issues

The use of the DancePro prototype, the findings of which were reported in Chapter Six, revealed technical issues that had a negative impact on its usability. These included: disappearing annotations, delays in the appearance of annotation, and the unresponsiveness of the pause/play button. Given that the exploration of the tool focused on the experience of annotation and not user-testing, the issues encountered are discussed here to account for my decision not to use DancePro in the real-time live annotation of dance.

Icons are described as beneficial for tagging or flagging details of the video when there is not the time to make extensive or detailed annotations (Cabral *et al.* 2011: 2296). They are designed to drop onto a predetermined location to minimise distraction. I frequently experienced, however, a time delay between selecting an icon and its on-screen appearance, often up to 10-11 seconds. The inaccuracy that resulted subsequently led to a decision to pause the video prior to selecting an icon, dropping the annotation mark on a still frame. While this work around made the tool just good enough for annotating pre-recorded footage, this would be unsuitable for live annotation.

The pause/play button also demonstrated a significant degree of unresponsiveness, and on one occasion DancePro took 56 seconds to respond to an instruction to pause. Subsequently, I started to navigate the footage using the cursor in the annotation time line meaning that the video was never played. This worked sufficiently because the cursor was sensitive enough to retrieve precise locations. This approach also proved useful for the slow frame-by-frame navigation of video content, making it possible to identify subtle changes in the dancers' movement that would otherwise be difficult to determine.

Further to the unresponsiveness of the tools, on several occasions annotations created using the drawing tool could be seen on-screen but failed to appear in the annotation timeline. Consequently, this meant that annotations could be deleted but not modified in duration.

Annotations appear in the annotation timeline as a standard 2.5 second block that can be modified in length to correlate with the information to which it refers. Extending the duration of an annotation is more straightforward than to shortening it. At times, despite shortening an annotation in the timeline it remained on screen for the pre-programmed 2.5 seconds. This can be seen in Figure 75 which is an annotated screenshot of DancePro showing two graphical annotations on screen. These are visible despite a modification to shorten them meaning that they should have disappeared before the still frame visible in Figure 75. In the image below, 1) identifies the modified length of the annotation, 2) shows the current location of the video frame, and 3) draws attention to the graphical forms that are still visible. The frequency of occurrences such as these led me to question the possibility of precise and accurate annotation practice using this current prototype version of DancePro.



Figure 81: A screenshot from DancePro that has been annotated to show how an annotation remains visible on screen despite the duration having been modified in the timeline.

DancePro is designed for Macbook, a popular choice of computer for artists. Some basic functions of the tools counter the ease and efficiency experiences by users familiar with Apple software. The DancePro application is missing, for example, the option to 'open recent' documents which provides a valuable shortcut to retrieving recent projects. When making menu selections, the user is required to click 'ok' and formal close down or exit the menu. The option to hide the menu by striking 'enter' on the keyboard or clicking on away from the screen does not work. Though this is a relatively minor observation, the fluid and intuitive nature of the user experience is disrupted if the conscious processing of demands and selections is required.