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Training the Analytical Eye: Video Annotation for Dance

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Theatre, Dance and Performance Training

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Training the Analytical Eye: Video Annotation for Dance

The practice of annotating video for the analysis and transmission of Western contemporary dance practices is in its infancy, and a handful of researchers are exploring its potential for publishing movement and choreographic ideas. Despite growing interest, literature relating to video annotation in dance is not readily available and, therefore, the contribution it makes to dance scholarship is unknown. In positioning video annotation as a form of *dialogical mnemotechnics*, this article sheds light on a method of analysis that is accessible to both those with and without prior training and experience in dance. I argue that *annotational thinking,* an iterative and recursive process of grammatisation, augments video documents and creates complex multi-layered artificial memories that can train the analytical eye in a way that deepens and enriches understanding of dance.

Keywords: dance analysis; grammatisation; memory; video annotation

Introduction

Video has become a ubiquitous method of documenting Western contemporary movement practices and choreographic work. It is a mnemonic technology (mnemotechnic) that alters the spatial and temporal condition of dance to create a (more or less) stable record[2], an artificial memory that provides access to past events. Video is non-notational, meaning that it does not articulate ways of knowing beyond what is objectively captured from the live event. Viewing, therefore, necessitates what performance scholar Matthew Reason (2008, p. 90-91) identifies as video literacy: the careful study of video to reveal '*something* of the performance' [emphasis in original].

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[2] The Dance Heritage Coalition explains that, 'Degeneration of the image can become a problem for all [video] formats' (2011, p. 14), meaning that the durability of video decreases over time.

This article introduces manual video annotation[3], a method of augmentation and *thick-layering*,[4] as a tool to support video literacy and a new way of viewing and studying dance. Video annotation supports the training of the analytical eye in a way that enriches and deepens an individual's understanding and transforms all future engagement with dance.[5] While video provides a memory of the past, complex multi-layered memories can be created that combine the objective and mechanical perspectives of video with an individual's personal analysis through the thinking and mode of study particular to the process of video annotation. I refer to this approach as *annotational thinking,* a way of doing analysis whereby understanding is neither predetermined nor develops only in relation to the content of the video but emerges through the annotation process. While real-time annotation can capture details of a live rehearsal or choreographic event, I focus specifically on annotating pre-recorded video footage in this article in order to argue for its potential for training the analytical eye.

To begin, I provide a brief context for the emergence of video annotation by situating it amongst a trajectory of notational inventions. I then introduce examples of multi-media publications (CDs/DVD-ROMs and websites) that have used annotation to articulate and transmit ideas about movement practices and choreographic work. To

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[3] I use *manual video annotation* here simply to recognise that annotations can also be created through automated computational processes.

[4] I use the term *thick-layering* to refer to the recursive and iterative process of video augmentation through annotation. This relates to Clifford Geertz' (1973) idea of 'thick description'. The term *thick mapping* might also be used.

[5] 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.

account for how annotation impacts dance viewing, I use examples from my extensive first-person experience of annotation. In this article, I differentiate between two general annotational approaches: drawing on top of video (graphical annotations) and digital marginalia (time-coded text annotations) and describe how these approaches result in similar processes of thick-layering but function differently in how they elucidate details of dance and movement knowledge. This article identifies annotation as a process of *grammatisation*[6], which effects the spatialisation and concretisation of observations and thinking in a way that breaks down the video document into units of analysis to generate new insights about dance.

The Emergence of Video Annotation—A Brief Overview

When it comes to documentary practices, dance has a rich heritage of innovation, experimentation and development, and the transient nature of dance and the elusive nature of the knowledge it contains have been driving forces in this area. For centuries, the dance community (including dancers, choreographers, researchers, companies, academies, cultural and governmental institutions) has employed or devised methods for articulating, transmitting and remembering the skills and knowledge acquired through the practical and theoretical experience of dance, in other words, dance knowledge. Western dance and movement notation is one such method, and its history is comprised of different approaches developed to suit the needs and demands of ballet masters, choreographers, and researchers, and their ideas about dance. Since the earliest known

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[6] Philosopher Bernard Stiegler (2014) uses the term *grammatisation* to refer to the spatial and temporal concretisation of the spoken word onto the page as a visual mark. Writing and notational practices are processes of grammatisation, externalising and concretising thoughts and ideas to create a fixed and tangible record.

record of dance notation appeared in the mid-fifteenth century, an estimated eighty-six systems for Western dance had been invented by the early 1980s (Hutchinson Guest 1984, pp. 201-203).

Notational technologies are co-constructed with developments in dance methodologies, both of which evolve according to the capacity and limitations of available technologies and social and artistic demands. Twentieth-century notational efforts such as Labanotation and Benesh Movement Notation (BMN), for example, sought to capture not only dance but all kinds of human movement, intending to free notational systems from a reliance on a single movement idiom, and promote internationalisation. Such systems became possible through the development of shared standards, conventions, and analytic frameworks which were important to reach consensuses about how dance should be translated and remembered.

Methods of dance and movement notation condition, in part, what is known about the dance because they translate a notoriously ephemeral medium into a fixed and stable form, making it available for circulation and study. Nevertheless, I am not concerned here with questions of liveness, translation and authenticity in documentary practices but how the dance record becomes a partner in the production of knowledge.

It was hoped that notation would become instrumental to dance scholarship, yet the Western dance community has embraced no single method of notation and it is not as ubiquitous as many advocates hoped it would become. Today, there is a general dissatisfaction with traditional codified notation systems, because they are perceived by many dancers and choreographers as being too difficult and time-consuming to use. As dance notation scholar Ann Hutchinson Guest (1984, p. 137) explains, 'Choreographers are so accustomed to working without notation' that there is a resistance or reluctance to use it. Furthermore, as Western contemporary dance practices resist twentieth-century

notational efforts towards standardisation, it is recognised that there is a need to create notational methods particular to a choreographer's work or own use of vocabulary (Hoogenboom 2007). The dissatisfaction with notation, performance scholar Maaike Bleeker suggests, has led to the development of new tools for articulating and transmitting dance (2010, p. 3).

It is in the context of notational technologies that I situate video annotation as the most recent stage of an analytic heritage and trajectory. Since the late 1990s, there has been a desire from those who practise, study, and view dance to find ways to document outcomes, such as movement tasks and choreographic work, in a manner that can be transmitted beyond the immediate artistic team and be readable for heterogeneous audiences. Video annotation has emerged at a time when researchers have been contemplating what kinds of methods might illuminate details or ideas about dance that might not be easily objectified, visually accessible, or rationalised in the format of a score or video document.

In dance, the term *annotation* has gained currency with the rise of digital and interdisciplinary practices. Nevertheless, literature relating to video annotation in dance is not readily available because not much has been published; in fact, discussion is largely absent in dance research despite growing interest. The 2015 issue of *Performance Research* 'On An/Notations' is the first volume dedicated to examining annotation in the performing arts. However, while it illustrates diversity in what might be referred to or conceived of as annotation from perspectives including readership, performance, and collaboration, a clear understanding of what exactly annotation is, how it operates, and how it may be distinguished from notation does not manifest. The focus of this article is how annotation facilitates the active reading of video documents and helps to uncover or generate new insights, thus contributing to dance analysis.

The most tangible example of annotation is marginalia, the notes and comments that readers make in the margins of books; however there are no strict definitions of what annotation is when it comes to continuous media such as video. Studies (i.e. Jackson 2001; Hauptman 2008; Sherman 2008) reveal marginalia to be signs of active reading, cumulative scholarship and evidence of the reader tailoring the text to support and extend their understanding. Annotation can thus be described as an editorial practice, one where a document is augmented with the analytic, reflective, and conceptual insights of an individual. Annotation is a form of writing in its own right.

Digital tools make it possible to layer video with viewers' insights to create a tailored or edited videoed account of dance. Like marginalia, digital annotation can serve as both an instrument for active reading and for recall that enables details of descriptive and analytic study to be retrieved. However, graphical annotations and digital marginalia do not leave an audit trail of cumulative scholarship in a way that is possible to access in book readers' marginalia, yet this is an essential inherent characteristic of the analytic method.

The use of video annotation for the articulation, transmission and recall of Western contemporary dance practices is in its infancy and a handful of researchers are exploring its potential for publishing movement and choreographic ideas. Arguably, the best-known example of dance video annotation is *Improvisation Technologies: A Tool for the Analytical Dance Eye* (Forsythe et al. 2012).[7] The CD-ROM (later DVD-ROM)

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[7] Forsythe's CD-ROM was originally developed as the in-house teaching tool *Self Meant to Govern* (1995) for new ensemble dancers (Ziegler 2017, p. 41). The commercially marketed *Improvisation Technologies*, first published in 1999, comprises only a subset of the material included in the 1995 version, a copy of which is housed in the German Dance Archive in Cologne (Ziegler 2017, p. 44).

has been described as 'the most aesthetically and pedagogically advanced example of the "genre"', yet it exhibited techniques explored by researchers a decade before (Dixon 2007, p. 30).[8] *Improvisation Technologies* introduces the methods of choreographer William Forsythe by having him demonstrate a range of exercises while describing what he is doing and the choices he makes on film. Diagrammatic graphical lines, created using computer-aided design, are layered over the video footage to draw attention to both the mental and physical thinking space of Forsythe's movement. The graphical lines are annotational because they augment the video document and thus demonstrate what can be learned about Forsythe's improvisational practice.

Rebecca Groves, former dramaturg for the Ballet Frankfurt, proposes that *Improvisation Technologies* 'provided audiences with a set of analytic skills to become better readers of dance performances [… and] created a legible graphical language and an accessible conceptual framework' (2007, p. 92). While I agree with Groves' assertion that the graphical annotations create an accessible visualisation of movement ideas, *Improvisation Technologies* only has the potential to train the analytical eye. A commitment to active reading, attention to detail and a lot of work is required to move beyond 'aesthetic' viewing and to read the annotations in dialogue with Forsythe's movement, labour that is not often acknowledged.

The use of graphical annotations to elucidate the spatial properties of dance through video mark-up is a particularly effective method. Graphical annotations are often attractive forms that create a distinctive layer of information that contrasts with

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[8] Steve Dixon, researcher of media and computer technologies, cites the research of Jacqueline Smith-Autard and Jim Schofield at the Bedford Institute (UK) as having developed technical innovations years before *Improvisation Technologies* was published (2007, p. 30).

the aesthetic of the video content (see Figure 1). The aesthetic contrast between the video and annotations directs the viewer's attention towards selected details; the viewer cannot help but follow their instruction, meaning that graphical annotations are coercive forms that shape viewing.

Figure 1. An image of *Alignment Annotations*, a section of *Synchronous Objects for One Flat Thing, reproduced*.

Graphical annotations also feature in the DVD-ROM *Material for the Spine* (Paxton and Contredanse 2008) which looks closely at the movement practice of Contact Improvisation founder Steve Paxton, and in the website *Synchronous Objects for One Flat Thing, reproduced* (Forsythe and OSU 2009), which presents a close reading of Forsythe's choreographic work *One Flat Thing, reproduced* (2000). In each case, graphical annotation features only in sections of the publication and is just one of many methods used to articulate movement ideas and the thinking space of the dance practice. In addition to annotation, *Material for the Spine* adopted Motion Capture,

audio commentary, and a creative use of staging to transmit movement ideas. *Synchronous Objects* is part of a much larger project that includes interdisciplinary perspectives and transformations of dance data and the graphical annotations to which I refer can be found in the *Alignment Annotations* and *Cue Annotations* objects.

   Material for the Spine, like *Improvisation Technologies*, is a pedagogical resource that introduces movement tasks and ideas that aggregate to form a more complete understanding of a movement practice. For Paxton, graphical annotations help the viewer to understand and appreciate complex details and to 'draw them in slowly' Paxton 2007 in Corin 2017, p.39). The graphical annotations in *Synchronous Objects* weave a complex visual system of analysis that intends to draw attention to different facets of the choreographic work in a single interface. Unlike *Improvisation Technologies* and *Material for the Spine,* however, the *Synchronous Objects* annotations can be toggled on and off by the viewer and the dance can be viewed with and without the video mark-up. The annotations are carefully constructed to match the temporal and spatial properties of the dancers' movements meaning that those relating to sustained spacious actions dominate viewing while those relating to short impactful activity can be harder to identify. Subsequently, a hierarchy of annotational forms is created which means that, if the viewer is to develop a nuanced understanding of the work, viewing is far more laborious than is the case for *Improvisation Technologies* and *Material for the Spine.* The additional labour is not, however, negative but to be expected owing to the complexity of the video content.

A different approach to annotation, which I refer to as *digital marginalia,* can be seen in the Motion Bank on-line scores (2013).[9] As previously mentioned, *marginalia* is the term for the notes and comments readers make in the margins of books, often taken as a sign of active reading or studious care. When it comes to video, the digital marginalia to which I refer are text-based forms which are time-coded so that they have a temporal attachment to their corresponding point in the footage. Such annotations can provide commentary on time-based events and access to the experiential, phenomenological, and performative knowledge of the work.

The use of digital marginalia operates in the same way as what performance scholar Ben Spatz describes as increasing the '*density* of a video document' or a process whereby 'uncut audiovisual documentation […] is overlayed by textual annotations and citations', which he refers to as *illuminated video* (2017, p. 4; 2018 p. 152). There is a distinction between the marginalia stored on top of a video source and the marginalia presented within a webpage that hosts embedded video in terms of viewer engagement. Unlike the graphical annotations described earlier and instances of textual overlay, Motion Bank's digital marginalia have less of an initial impact on dance viewing because they are not directly layered over the video footage but alongside, as though in the margins of the video source (see Figure 2). The weaker spatial contextualisation between the annotations and the corresponding video content requires the decision to actively engage with the notes and comments that accompany the video document in order to enhance dance viewing and interpretation. In Motion Bank's *Using the Sky* (Hay and Motion Bank 2013), the choreographic score to the left of the video and the

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[9] Motion Bank was 'a four-year project of The Forsythe Company providing a broad context for research into choreographic practice' (Motion Bank 2013).

performer insights to the right provide a valuable entry point for viewers with different skillsets and experience to make sense of the dance.
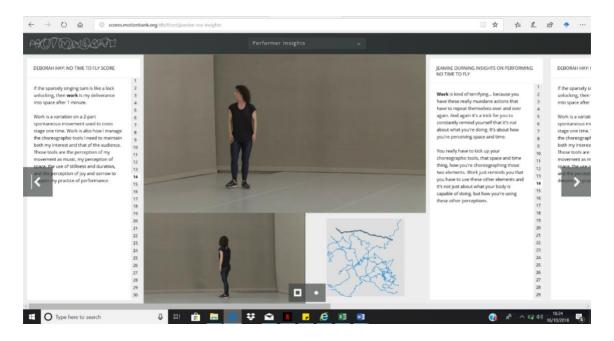

Figure 2. A screenshot of *Using the Sky* (Hay and Motion Bank 2013) that exhibits digital marginalia to the left and right of the video in the form of score instructions and the performers' insights.

Arising from interdisciplinary dance research projects, *Improvisation Technologies, Material for the Spine, Synchronous Objects* and the Motion Bank scores are examples of enhanced critical curation that emerge from a re-authoring of video materials that control the narrative that is transmitted and later recalled about choreographic practices.[10] The publications were developed with the intention of attracting a broader readership for dance and, theoretically, make the artistic philosophies and practices more accessible to viewers with diverse experiences in dance

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[10] I refer to an *authoritative* perspective as one whereby annotations and publications are developed by, or closely with, the choreographer and dancers who have first-hand knowledge of the movement and/or choreographic practice.

(see Leach 2017). This short list of publications is by no means exhaustive but illustrates the use of graphical annotations and digital marginalia.

Using digital annotation tools, artists and students can document their own ideas and observations through graphical annotations or digital marginalia which, I argue, not only enriches the video source but also the individual's cognitive understanding of dance. Annotation may be conducted from an unauthorised perspective (i.e. annotating the work of others without intimate knowledge of the creative process) or from an authoritative perspective where the artist or student analyse and edit video accounts of their own practice. Either way, video annotation, I will argue, positively impacts the training of the analytical dance eye in a way that feeds into future practice.

Video Annotation Tools

The developers of the Creation-Tool, prototype software for the multi-modal annotation of video, report 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, p.573)

Cabral et al. suggest, therefore, that 'video annotators are becoming important in dance environments' (2012, p.573). While it is true that some artists are exploring different forms of mediating, transmitting and remembering dance ideas, the importance of video annotation appears to be predominantly driven by the academic research community. There is currently little evidence to suggest a demand for such tools from the wider dance community. Subsequently, a greater awareness of what video annotation offers creative practice and dance scholarship is crucial so that video documents, as rich sources of information, can become the basis of more complex dance memories.

Dance-specific annotation software started to emerge in the late 1990s when researchers and artists sought new ways of working with video.[11] ELAN, first released in 2002 and normally used for conversational analysis, has been adopted by cognitive linguists (i.e. Carla Fernandes, see Fernandes and Jürgens 2013) and cognitive scientists (i.e. David Kirsch, see Kirsch 2011) to examine how dancers process information through imagery (in Fernandes) and marking (in Kirsch). It has been suggested, however, that the 'text-centrism' of ELAN and the 'complexity of using the software during rehearsals' means that it is 'seldom used to annotate recordings of performing arts' by artists themselves (Bardiot 2015, p. 82).

The documentary and analytic needs of artists, learners, and viewers are varied, and tools should accommodate these needs. For example, a tool that supports multi-modal annotation (i.e. drawing, text, voice, and images) could function as a sketchbook for creative processes as well as software for analysis. One that enables the contributions of different users to be stored in different columns or tracks would support collaboration by allowing for the differentiation between the ideas of multiple annotators.[12] Ideally, an annotation tool should also permit the mark-up of both real-time and recorded footage to allow for both immediate and reflective annotational approaches. Crucially, a clear and immediate spatial and temporal contextualisation between annotations and the video content should be established and maintained to ensure accuracy and ease in annotational processes. No one tool currently offers all of

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[11] Video annotators have existed since the late 1980s and include EVA, MRAS, AntV, Ambulant Player, and WaC (Cabral et al. 2012, p. 573).

[12] The *Research Video* tool that is currently being developed by the Zurich University of the Arts and Process Studio enables the contributions of different users to be distinguished by storing annotations in separate tracks.

the functions listed above, but I now draw attention to two tools that I have used

extensively, DancePro and Piecemaker2 (PM2), because they meet some of the criteria

identified above and each offer something different to dance analysis.

Figure 3: A screenshot of DancePro.

DancePro (Figure 3), developed as part of Europeana Space,[13] is a prototype

digital sketchbook that supports the multi-modal annotation of video.[14] The video

stream is in the centre of the DancePro interface and the surrounding space acts as the

blank canvas of a notebook: both spaces are available for annotation. The annotation

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[13] The Europeana Space project ran from 2014-2017 and aimed to create an 'open environment
for the development of applications and services based on digital cultural content'
(Europeana Space n.d.).

[14] One of the key advertised functions of DancePro is the ability to annotate in real-time;
however, based on my experience, this is not yet a consistently working feature of the tool.

timeline that sits below the video and the video commands (i.e. play, record, forward) provides a valuable visual representation of the density of annotations, the extent of thick-layering, and the frequency with which different modes of annotations are used (see Figure 3). Arguably, the most interesting feature of DancePro is that it enables viewers to draw directly on top of video to create their own graphical annotations, as can be seen in Figure 3. Drawing on top of, or close to, the video content creates a meaningful spatial contextualisation that supports analytic engagement.

PM2 (Figure 4), which was used in the development of the Motion Bank scores, is a reprogrammed version of Piecemaker (now Piecemaker1) designed by David Kern, a dancer with The Forsythe Company. PM2 allows time-coded text annotations to be stored adjacent to the video file. Clicking on an annotation causes the video to jump to the corresponding point in the footage which facilitates the efficient navigation of annotated content and creates a crucial temporal contextualisation for the annotator's observations and insights. For continuous audio and visual material, such as video, annotations can also save time when searching for content from a particular rehearsal or performance. Piecemaker1 and PM2 augment video footage in a way that makes it possible to organise and retrieve the content of archived video materials and, therefore, know what is available on individual recordings (Kern and TanzKongress 2013).
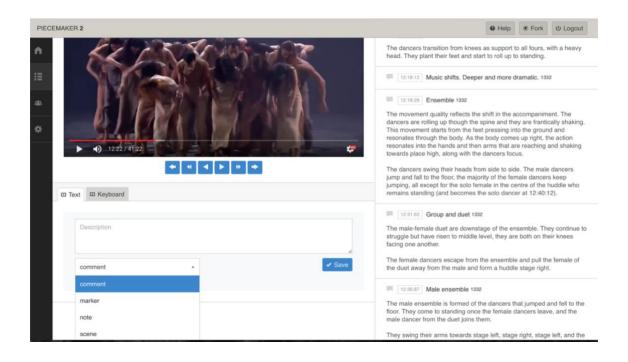
Figure 4: A screenshot of Piecemaker2.

Mnemotechnics

Stiegler (2014) characterises mnemotechnics such as writing and computation as non-biological forms of memory that inform our awareness of the present. Stiegler contemplates the implications of digital technology as a means of storing and accessing information, which leads to questions such as how technologies construct memories and transform the way humans think.

Following philosopher Edmund Husserl, Stiegler proposes that the 'now of temporal flow' (consciousness or awareness of the present) is constructed by the assemblage of perceptions in the present moment (primary retentions), which are 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), and what they anticipate or expect to see in future experiences (protentions) (2014). Stiegler's thesis is important for my argument because of how he identifies that retentions and

protentions can become collective, or agreed upon, via tertiary retentions (2014), or mnemotechnics and artefacts. He 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 (Stiegler 2009b, p. 46 [my emphasis]).[15] In other words, our experience of the present is shaped by the technologies and artefacts that store information and knowledge that we ourselves have not directly experienced.

Documentary methods such as notation, video, sketchbooks etc. create artificial memories of dance that provide access to the past already-there. Artefacts such as photographs, written texts, notation scores, video, or files stored in the computer, can be shared, precisely because they are external to the individual, stored in a place outside the human mind. These technical forms of memory contribute to what is collectively known about dance, in other words, a shared memory that is formed through different channels including individual experience, the oral and body-to-body transmission of knowledge, technological apparatus and documentary artefacts. Returning to the focus of this article, video captures a rich visual record of dance, but it has not removed the need, or desire, to examine, transmit or retrieve movement practices through an analytic lens. I argue that annotations edit and augment the mechanical and objective video document to create a perspective on the work by highlighting what details to look out

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[15] 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 (2009a, p. 9). Stiegler believes that the 'Heideggerian analysis of modern technics cannot account for contemporary technics' as it excludes tertiary retention (2009a, p. 9).

for in a way that directs understanding. Furthermore, video annotation enriches not only an individual's knowledge but also the collective knowledge of dance by drawing attention to different kinds of understanding and perspectives to provide access to a past already-there that is more enriching than the original video record alone. Annotation facilitates a personalised edited analytic account on top of the existing video document.

The Grammatisation of Thinking

Annotation's success as an analytic method arises from how it is used to break down video content into units of analysis in a way that draws attention to the less visible or less accessible details of dance. Spatz suggests that the

> juxtaposition of audiovisual and text inscription makes clear in a new way that what we are witnessing is not merely video documentation of practice but an entirely new domain of inscription in which other aspects of body can circulate: the video way of thinking (2018, p. 152).

This article introduces what I refer to as *annotational thinking*: the process of creating and viewing annotation in dialogue with the video content through which a heightened perception and understanding emerges.

Annotation is like the mnemotechnical practices of writing and notation because it grammatises observations and insights about dance into a spatial and visual concretised form (the annotations themselves). Importantly, however, annotation is what I refer to as a *dialogical mnemotechnic* in that thinking and understanding evolve with and through an active reading of the source. Annotation does not precede the video document. The meaning and value of annotations are, therefore, dependent on their spatial and temporal attachment, or contextualisation, to the source, which enables the personalised mark-up of video in the way that a reader writes comments in the margins

of a book.[16] In other words, the annotator's analytic retention is underscored and dependant on the video document.

Annotation practice, like video literacy, is characterised by an increasing familiarity with the content of the video source through which attention shifts from general details to the specific. In the early stages of annotational viewing, the wealth of information contained within the dance work or rehearsal footage necessitates dividing the video content into manageable units for analysis. For example, segmenting the video content according to choreographic structure provides a starting point for annotation and, crucially, the opportunity to analyse smaller excerpts. Subsequently, video annotation begins as an activity of *tagging*; flagging key moments in time. Key moments may include the start and end of a duet, for example, of sections performed in unison, or the appearance of a particular theme or idea. Adopting a task-oriented approach to video annotation is beneficial in the early stages in order to compartmentalise the activity of viewing and create an *analytic scaffolding* upon which descriptive, observational, and analytic layers can accumulate.

Because early observations are used primarily to create a scaffolding for future analysis, not much attention is given to the content or appearance of these *tags*. In DancePro, tags can be created using *bookmarks*, stock icons that land on screen in a predetermined location, and a visual system of representation can be developed by using a range of icons for different information or analytic intentions. In PM2, tags are words or phrases and are gradually incorporated into a more expansive framework of observations that become more specific and sophisticated over time. For both tools, tags

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[16] I refer to annotations that become detached from the source to which they correspond as *orphaned annotations*. Without the source, annotations adopt the status of notes or notations (Stancliffe 2019).

are only temporary and are most valuable in the early stages of analysis: as familiarity with the video content grows with repeated viewings, tags are adjusted and refined for accuracy and more detailed observations accumulate, resulting in different layers of information pertaining to what the viewer has recognised in the work. Subsequently, annotating video is a process of thick-layering constructed through a dynamic interplay of creating, re-perceiving, and refining annotations, which constructs a lens through which the dance is seen. Through annotation, the path towards comprehension is asynchronous, fragmented, and accumulative, and the longer the video content is studied, the more in-depth, fine-tuned and sophisticated the viewer's insights will be.

    As an accumulative and ongoing process, annotation requires commitment and labour in order to study the video document more closely, which encourages exactitude and precision. Crucially, there is no obvious endpoint in annotational viewing. Through repetition, different details and deeper layers of the dance work — hitherto unknown components — can be uncovered and the video document becomes multi-layered. The accumulation of insights grammatised as annotations (or personalised analytic retentions) creates a complex audit trail that augments what can be recalled from the video in future viewings. Annotations are documented insights and become artificial memories that are meaningful because of their spatial and temporal relationship to the video. Importantly, these observations and insights are inscribed into the video record in a way that creates an anchor, folding into future viewings. For example, the graphical annotations in Figure 5 draw attention to the spatial progression of a circular leg movement performed in unison by three dancers. The annotations are the product of prior analytic work and their very presence on screen informs engagement with the video content because their meaning can be immediately recalled. Subsequently, it is

not necessary to study the same movement detail again because the annotations act as a shortcut to this knowledge.

Figure 5: Examples of graphical annotations used to draw attention to the spatial progression of movement.

With repeat exposure, the content of the annotations becomes embedded in viewing, meaning that former tertiary retentions become biological retentions and protentions, and the attentional capacity of the annotator's mind becomes free to focus on other details of the dance work. The spatial progression of the leg, for example, may be later recognised as a recurring motif because this detail has already been flagged through annotation; or the viewer might start to look beyond spatial form and focus on the idiosyncrasies of technical execution or timing. Becoming aware of the more 'hidden' details of the dance, moving them into the foreground through annotation, and engaging with existing annotations is an iterative and recursive process that gradually transforms the viewing experience. Commitment to this practice is important; the more deeply the viewer engages with the dance, the greater their reward will be.

Annotation is an editorial practice that shapes and re-authors the video source according to the experience, interests, and needs of the individual, meaning that the viewer chooses to draw attention to, and thereby privilege, aspects of dance knowledge over others. Thus, the specific approach adopted by the professional and the student, when annotating one's own work or the work of others, will differ. Annotation can be described, therefore, as a highly specific process that creates a nuanced perspective of the video record.

Personal experience has challenged my prior assumption that annotation reveals what an individual already knows about the work, or what they feel is most integral to it.[17] Instead, I propose that active reading of dance through video annotation is a problem-solving activity that helps those who annotate to 'know' dance more deeply. The viewer can allow their explicit knowledge, or that which is already easily recognisable or comprehensible, to recede into the background when doing annotation in order to allow their focus to turn towards unfamiliar and complex details. While experience determines what we see in the video document, the work of annotation to break down video content helps the viewer to move beyond what they see in the record as determined by experience and retention. Through repetition, the unfamiliar becomes known, making space for more hidden details to move into the foreground of attention, and so on and so forth. Annotation, therefore, constitutes a process of in-situ thinking that advances an individual's analytic capability and understanding in dialogue with the content of the source. Nevertheless, allowing what is already known to recede into the background can impact the ability to later recall these details precisely because they have not been inscribed as artificial memories. A link between what is annotated and memory suggests that annotation is not more objective or scientific than any other mode of analysis in the record that it creates.

Valuably, video annotation does not exclude those without training and experience in dance. Unlike dance and movement notation, there are no requirements to

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[17] It is important to acknowledge here that the annotations that feature in the aforementioned multi-media dance publications do elucidate what is already known and the expert knowledge of those intimately involved with the dance practice or work. However, I draw attention to the character of annotation as a tool for uncovering more about the dance which draws upon the annotator's own experience in dialogue with the content of the video document.

be versed in codified analytic frameworks or dance vocabularies. A novice dance 'reader' can develop their understanding of dance at their own pace. The fact that annotation is an accessible analytic method ultimately means that different understandings can arise, because the dance will be viewed according to an individual's prior experience (retention), what they are expecting to see (protention), and the annotations they create (tertiary retention). Annotators are not required to use shared methodologies and analytic frameworks that aim for standardisation and classification, meaning that different voices and perspectives towards dance can be articulated, stored, and recalled, expanding what is represented and remembered about dance practice.

Conclusion

This article has discussed how dance understanding is shaped by prior knowledge and technologies that condition viewing experiences. Annotation is a dialogical mnemotechnical tool that can be used to augment video documents of dance, which supports and extends analytic viewing. Through the annotational way of thinking, analytic, reflective, and conceptual insights are inscribed into the video record. The resulting annotations are a form of writing in their own right, creating an edited and tailored video document of dance.

Video annotation does not replace traditional codified movement notation systems but offers an alternative for artists, scholars, learners, and audiences who may perceive codified movement notations to be out of reach or insufficient for their needs. While annotation requires commitment and labour, it is more accessible than many traditional systems of notation which can be perceived as too complex and time-consuming to use. Video annotation is formative in training the analytical eye and the annotator is rewarded with improved clarity in seeing, which matures through the iterative and recursive process characteristic of the method.

Annotations bridge the gap between the biological or internal memory of the individual (retention) and the video content (tertiary retention) by creating a memory of observations and analysis in the form of tertiary retention (annotation). Graphical annotations are instantly accessible in future viewings because they are layered directly on top of the video content, meaning that the viewer can access the results of prior analysis. Prior analysis may be that which is undertaken by the annotating viewer or in the annotations in the aforementioned multi-media publications, which provides access to information that the viewer has themselves not generated: a past already-there. For digital marginalia, prior analysis can be accessed but is less instantaneous than for graphical annotations because the spatial contextualisation is weaker. Nevertheless, what is important is that annotations allow the viewer to uncover components of the dance that have not yet become embedded into their experience of seeing dance; in other words, that which is not yet part of the individual's retentional and protentional framework of engaging with dance. Importantly, through repeated viewings, annotations become familiar points of reference and gradually become integrated into dance viewing. Moreover, with time, the information and knowledge contained within the annotations is woven into the individual's biological retentions and protentions, thereby transforming the way that they experience dance and conduct future analysis.

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