# Scoring Choreography: Process and Bodies in Digital Forms

*Hetty Blades*

**Abstract:** This paper considers recently developed digital dance scores, paying particular attention to *Using the Sky* (Motion Bank, n.d.), an online score of Deborah Hay's work *No Time to Fly* (2010). I suggest that *Using the Sky* is typical of an emerging field of choreographic 'poetics' (Cvejic & De Keersmaeker, 2012; deLahunta, 2014), which offer a form of co-authored self-reflection, drawing on multiple methods to analyse and share choreographic processes. *Using the Sky* and similar projects shape the legacy of dance works, constraining their identity in accordance with authorial intention and centralising the choreographer's voice. This impacts on empirical and post-structuralist notions of authorship, implicating a shift away from established paradigms and reconfiguring spectator-author relations. Furthermore, Hay's somatic practice poses a familiar challenge regarding the presence of the body when writing (about) dance. This investigation suggests that the methods adopted by Hay and her team allow for features of the body to extend into the digital realm. The flesh-less presence of the body demonstrates the primacy of Hay's practice and further impacts on readings of her work. This paper provides an introduction to some of the key questions posed by the score; demonstrating how it raises and reconfigures issues of authorship, affect and action in dance practice and research.

**Keywords:** scoring, documentation, authorship, digital media, choreographic practice

# Scoring Choreography: Process and Bodies in Digital Forms
Hetty Blades

*First there is tapping. The noise made by walking in an empty room. The small figure of Jeanine Durning moves in a circle. Once complete, she takes a few steps on a diagonal, her right-side leading; body turned to the camera. Durning's arms slowly explore the space around her. She stops. Dipping her head, scooping the air in front of her. Her spine follows – smooth, snake-like. She meanders on, each movement left behind. The recording is non-rewindable, the movement unrepeatable. Calm, unspectacular, each moment as significant as the last. In a box next to Durning, black and white lines travel through imagined space. Flashes of colour (dis) appear. They have the visual texture of paint, they form a flock of virtual brushstrokes. Chasing themselves – they gather at times, echoing a body – never fully formed. The lines collapse into dots, filling the screen, they re-group into a headless form. The shapes are never still; collecting, forming, dissolving.*

Side-by-side the body and the digital are juxtaposed, yet something resonates between the two. Human and digital cells simultaneously explore space, dispersing and re-forming, performing a similar dance. The dance in question is Deborah Hay's solo, *No Time to Fly* (2010). The images are part of *Using the Sky (UTS)*, a digital score of the work developed as part of *Motion Bank* (2010–13), a research project initiated by William Forsythe, alongside Scott deLahunta and others.[1]

UTS draws on inter-disciplinary methods to share Hay's practice and the principles of her work. Hay co-authored the score alongside the *Motion Bank* team. *UTS* raises many questions regarding the writing and notation of dance, including: what is the role of the 'author' in documentation? How can bodily knowledge be captured? And what are the motivations for documenting choreographic practice alongside – or in place of – performative products? This paper introduces the score and outlines the way in which it relates to current discourses regarding the dissemination and comprehension of dance knowledge. Through description and analysis, I argue that this score provides a pertinent example of the expansion of somatic practice into the digital sphere. Furthermore, it demonstrates the complexities of reading and receiving dance, in particular 'choreographic thinking' (Forsythe, 2008), through digital media. Examining the score in relation to Maaike Bleeker's concept of 'corporeal literacy' (2010), and responding to the scholarship of postmodern literary critic N. Katherine Hayles (1999), I suggest that *UTS* demonstrates a

---

[1] Motion Bank is an ongoing project, which explores choreographic practice. Phase one ended in 2013. It is facilitated by the Forsythe Company in collaboration with multiple partners. Information can be found on the website: http://motionbank.org/en/content/about

shift away from traditional modes of notating dance, and is firmly situated within a posthuman paradigm, in which 'there are no essential differences or absolute demarcations between bodily existence and computer simulation' (Hayles, 1999:3).

The concept of posthumanism is often discussed in relation to technologically driven, inter-active or immersive performance practices;[2] Hay's body-centric, somatic practice does not seem like an immediate contender for technological theorising. However, the digital rendering of work that involves little or no technology[3] presents an interesting challenge. The abstraction of the body and its reconfiguration in affective, aesthetic and kinaesthetically compelling forms aligns this project with Remshardt's description of posthumanism, 'dismantling the many binaries endorsed by Western dualism: body/mind, self/other, culture/nature, global/local and so forth' (2010:135). This study demonstrates the way in which posthuman performance theory is applicable beyond 'digital dance', and can provide a lens through which to understand the examination and expansion of somatic practice through digital media. Whilst much scholarship has discussed the impact of digital media on the viewing of performance,[4] this paper considers how the rendering of choreographic process through digital media maintains the presence of the body, challenging binaries regarding presence and absence, and drawing attention to the nature of perception.

**Scoring choreographic knowledge**

*Motion Bank* is described on the project website as 'providing a broad context for research into choreographic practice' (Motion Bank, n.d.). The breadth of the enquiry is evident through the multiple strands of investigation. For example, phase one involved numerous educational events, choreographic coding labs, workshops and inter-disciplinary research meetings, alongside the central scoring project.

Forsythe is well known for his interest in exploring choreography through technology. Previous projects include *Improvisation Technologies* (1999) and *Synchronous Objects* (2009), which led to the most recent stage of *Motion Bank*. Whilst these early projects focussed on examining movement in performance, in order to visualise Forsythe's choreographic principles, the focus of the recent research expanded to consider the work of various artists, and examined the process of dance making alongside performances. Digital scores were developed of works by Jonathan Burrows and Matteo Fargion, and Bebe Miller

---

[2] See Dixon (2007) and Remshardt (2010).
[3] Hay rarely choreographs to music and has previously expressed a disinterest in recording her work (2000).
[4] See Auslander (1999), Phelan (1993).

and Thomas Hauert, as well as Hay. During the launch of *UTS*, Scott deLahunta explained that a key concern for the project is the question: 'What can digital media offer in the project of rendering process?' (deLahunta, 2013). This aim draws together two culturally relevant issues. Technology has obviously had a significant impact on the documentation of dance. Simultaneously, recent years have seen an increased interest in the analysis and dissemination of choreographic process (Birringer, 2013); therefore this research aim is timely and significant.

No Time to Fly is a solo work that Hay choreographed on herself. It premiered in New York in 2010. Once the work was complete Hay wrote a score of it through language and drawing. In order to develop *UTS* the text-score was sent to Durning, Ros Warby and Juliette Mapp who were instructed to practise the score alone for three months. The 'executants' (Motion Bank, n.d.) were recorded performing their interpretations seven times, resulting in twenty-one digital versions of the work. These recordings and the text-score are central to *UTS,* which also contains diagrams, interviews, written accounts, and an animated adaptation of the text-score. These address features such as the concepts, the movement and insights from the executants, thus providing an extensive, inter-disciplinary account of *No Time to Fly.*

The use of the term 'score' to describe the outputs from *Motion Bank* situate them within an extensive discourse regarding the notation of dance.[5] Although there are codified methods for notating movement, such as Laban and Benesh notation, these traditional approaches are rarely used by contemporary dance practitioners. The term 'score', however, is frequently adopted to describe a wide array of physical and non-physical parameters, which underlie and instigate movement. There are many possible ways that one might want to argue that *UTS* and its *Motion Bank* counterparts are not technically scores; however, the breadth of the term means that it is difficult to define, or articulate exactly, what functions a dance score must fulfil. Furthermore, adopting a non-realist ontological perspective[6] allows us to base our understanding of what objects *are* in the practices and language of the people who refer to them, meaning that *UTS* is a score so long as it is referred as such by 'competent grounders' (Thomasson, 2005:225) of the term. Furthermore, a consideration of its role as a score in relation to traditional notational approaches is of interest. Contrasting the methods used to render, disseminate and score *No Time to Fly* with codified notation reveals information about the impact of digital media on the way that we read and perceive movement. Laban and Benesh notation, for example, both use symbols on a staff to represent

---

[5] See Goodman (1976), Hutchinson Guest (2005), McFee (2011, 1992).
[6] See Davies (2009) and Thomasson (2005) for detailed discussions of this perspective in relation to art works.

body parts. They aim to systematise the behaviour of the body in order to make it easier to read. This approach abstracts movement into denotative symbols, adopting a similar methodology to traditional modes of abstracting speech sounds into written form.[7] Cognitive literacy is required to decode the notation and transmit this information to the body, thus demonstrating a dualist perspective in which the mind leads the process of understanding. Analysis of *UTS* reveals that, like live performance, some of the objects on site document movement through aesthetic and kinaesthetic forms, offering an alternative approach to scoring dance.

*UTS* consists of six pages, or 'sets', accessible via the homepage. The emphasis of the score is clearly on Hay. Her written notes and recorded voice explain her practice and the priorities of the work. The focus on process situates the score within an evolving 'community of practice' (Wenger, 1998; deLahunta, 2013) in Europe and the USA, comprising artists such as Anne Teresa De Keersmaeker, Steve Paxton and Emio Greco; each of whom have worked on related projects alongside researchers to develop accounts of their choreographic processes. As previously mentioned, these projects are located within a cultural context that is increasingly concerned with analysing and articulating choreographic process. Johannes Birringer, writing in 2013, expresses a cultural shift:

> We live in a changing world of dance, and the level of discourse regarding dance and choreographic practices has been raised considerably compared to the mid or late twentieth century.
>
> <div align="right">(Birringer, 2013:8)</div>

This is not only evident within academic contexts; there are also an ever growing number of after-show talks, open rehearsals, choreographic blogs and so on. Choreographers are increasingly vocal within contemporary dance and academic contexts.

There are many potential reasons for this shift. Social anthropologist James Leach suggests that projects such as *Motion Bank* are responses to the demands of 'knowledge economies' (Rooney et al. in Leach, 2013:1), suggesting that the governments of the countries producing these objects place value on knowledge (Leach, 2013). The physical nature of dance knowledge means that it is not easily sharable.[8] DeLahunta suggests that 'dance *normally* lacks legitimacy in the grand scheme of what we consider to be knowledge in the 21st contemporary society with its association with verbal language, "alphabeticism",[9]

---

[7] See Rotman (2008).
[8] See Pakes (2009) for a detailed discussion of choreography as a knowledge-producing endeavor.
[9] This concept is borrowed from Rotman (2008).

logic and rational thought' (2014:2). Choreographers are therefore required to find ways to share choreographic knowledge in order for it to be valued. DeLahunta suggests that this has resulted in a new form of dance literature, as *Motion Bank* and similar projects have found ways to disseminate process in ways that are not solely dependent on linguistic forms. Literacy is important notion in the context of this discussion. If we are to consider *UTS* as a literary object, it is important to contemplate how it is to be read. The score contains many forms of representation, including diagrams, recordings and an animation, which challenge the linguistic, logical paradigm outlined by deLahunta, and perhaps align more closely with artworks or performative events. The score therefore demonstrates a shift away from a denotative paradigm for scoring dance and, in line with Hay's practice, offers an approach that is concerned with sharing the affective and kinaesthetic nature of movement alongside choreographic process.

## Practice, process and (kin)aesthetic forms

> I want to choreograph exacting movement content that contains no end to discovery, where milliseconds of stunning recognition take place within a strict choreography in time and space. Where soundless rhythms drive the dance.
>
> (Hay, 2000:81)

Deborah Hay's career to date spans six decades. She was born and trained in New York City, and began her professional career there during a time of significant change in the dance word. Hay danced briefly with Merce Cunningham and was involved with Judson Dance Theatre in the 1960s. Despite being at the epicentre of a flourishing artistic environment, Hay left New York in 1970 for quietude and reflection in rural Vermont. Thus began a life-long reflection on the nature of movement (Hay, n.d.). Hay now lives and works in Austin, Texas. Although she has choreographed for other companies, including The Forsythe Company[10] (Hay, n.d.), she is perhaps best know for her work with the Deborah Hay Dance Company and her solo works. *No Time to Fly* (2010) is one of many solos created on herself. It is possible that Hay's interest in scoring arises from a concern for the preservation and sharing of solos that are known only to her.

Hay's practice is idiosyncratic and introspective. During a talk entitled *The Continuity of Discontinuity: Readings About Non-Linear Learning* in Dusseldorf in 2013, she suggested that her research concerns only *her* body (Hay, 2013), which she refers to as her 'teacher'

---

[10] *If I sing to you* (2008)

(2013, 2000:xxxiv). The appearance of Hay's work is hard to summarise. She says of herself, 'It is difficult to describe her actions. It doesn't seem to be necessary' (2000:23). Movement arises from repeated questions and provocations such as, 'Where I am is what I need, cellularly' (2000:6). Hay uses these to explore simple sequences of movement and challenge habitual behaviours. She talks of an interest in discontinuity (2013), and writes in non-linear forms. An interest in cells repeatedly occurs in Hay's work; she is concerned with re-configuring her three-dimensional body into a 'cellular' body (Hay, 2013).

The way that *UTS* relates to Hay's practice is important; Hay's body-centric paradigm may not be easily transmitted through digital media. It is possible to suggest that using technology to create, share and examine dance poses a threat to the ontological centrality of the body, and that digital information is accessed solely by the mind, reducing the affective potential associated with



(Motion Bank, n.d.)

movement. However, this argument is based upon a conception of digital information as dis-embodied. This notion is disputed by Hayles (1999), who argues that the distinction between information and embodiment is based on flawed historical theorising. *UTS* supports this view in various ways, blurring imagined binaries between affective, corporeal experience and digitally disseminated information. It is clear that the team were dedicated to foregrounding Hay's practice. For example, the design of the site, in keeping with Hay's thinking, is not entirely linear. Boxes of text overlap one another, meaning that access to information is fragmented and 'discontinuous', challenging conventional modes of reading.

A further example of the central role of Hay's practice is provided by an animated interpretation of the text-score, created by digital artist Amin Weber. As demonstrated in the opening paragraphs, the animation can be viewed alongside a danced interpretation of the work. As with each of the 'sets', the text-score is also featured; each section aligned with the danced and animated rendition. The animation cannot be viewed on a full-screen; it is performed alongside Hay's directives. Thus *No Time to Fly* is manifest in textual, physical and animated form, displayed simultaneously through a digital portal, raising questions about the physicality, presence location of the work and the body.

The animation consists of continually moving black and white lines, with flashes of colour; they have the visual texture of paint. The lines form a flock of virtual brushstrokes, chasing themselves through space, they gather at times, echoing a body, but never quite
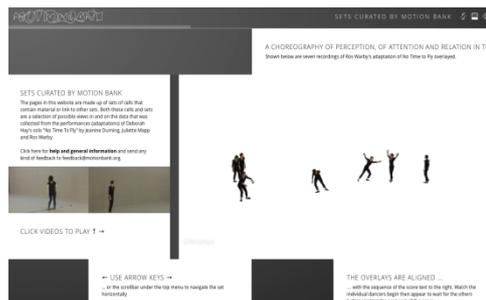
reaching a complete mimetic form. The lines collapse into dots, filling the screen, before re-grouping into a headless figure. The shapes are never still; collecting, forming, dispersing, they move at an even pace. Slow moments are notable in their rarity. In contrast to the danced versions, the animation is set to music. Although Hay states, 'I have absolutely no interest in choreographing to music' (2000:4), the executants' adaptations are not silent. At one point a song is sung; tapping, clicking, walking and breathing all contribute to a soundscape, arising from the body. These sounds form the basis of Weber's soundtrack (Motion Bank). They are enhanced and embedded within computerised sound. The use of sound arising from movement demonstrates Weber's engagement with Hay's practice. Despite moving away from her disinterest in music, he uses sound that arises from the body and highlights its presence within the animation.

Jeanine Durning describes her response to Weber's animation as 'visceral' (Motion Bank, n.d.), implying a physical, emotional reaction. A potential reason for this response is the way in which Weber manipulates the digital medium to maintain bodily features, despite not creating a direct representation of the human form. Like a body, the animated lines move sequentially. Sketched lines create the impression of a floor, meaning the form appears to have a relationship to gravity. Weber describes how he started with abstract sketches, but realised that there 'has to be a thing or a form that has the ability that a body has, that way of behaving' (Motion Bank). He goes on to state that he wanted to avoid developing images that were too 'bodyesque' (Motion Bank), and thus he developed a body in abstract form.

This body is arguably central in all representations of dance, however, notational systems traditionally abstract its behaviour into a series of coded symbols in order to make movement systematically legible. Further, Forsythe's interests have not always concerned the presence of the body. *Synchronous Objects,* for example, uses structural annotations to demonstrate immaterial features of movement; it is a direct result of Forsythe's interest in expressing choreographic principles *without* the body (Forsythe, 2008). In contrast, it seems as though the priorities of Hay's work could not be portrayed without maintaining the presence of the body. So, in what way is the body present in the animations and can the behaviour of the form explain Durning's response?

The way that our minds and bodies respond to dance has been researched and theorised from multiple perspectives and often involves recognition of the relationship between the dancers' and spectator's bodies. As long ago as 1933 dance critic John Martin suggested that the observation of movement triggers physical responses in observers, suggesting the notion of 'metakinesis' to explain this reaction. Martin (1933/1983) laid the foundations for

extensive work on dance perception, particularly 'kinaesthetic empathy'[11] and research in neuroscience.[12] More recently, the so-called 'Affective Turn'[13] in philosophy and critical theory has generated dance scholarship focussing on bodily sensations and experiences.[14] This brings us to an important question: can such theories explain the 'visceral' response elicited by an abstract body? 'Kinaesthetic empathy' is dependent upon the relationship between bodies. Neurological accounts depend on the recognition of familiar movements. Can Weber's animation ignite the same type of kinaesthetic response as a live dancing body, merely through the adoption of *some* bodily behaviors?

This question equally applies to other forms of digital imagery, such as those generated through motion-capture, for example. However, in the case of motion-capture, the human body has been physically present for the image to be generated. In this instance the source of the image is different. This digital 'body' was generated solely through computer code. The idea that a body can exist in purely digital form is a clear example of a posthuman perspective. Hayles, for example, views the body as 'the original prosthesis we all learn to manipulate' (1999:3). She suggests that 'extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born' (Hayles 1999:3). Under Hayles' paradigm, the extension of the body into the digital sphere can be read as the next stage in the body's socio-cultural evolution. This perspective allows for the material and digital to interact, thus allowing for kinaesthetic responses to occur from computerised forms.

It may appear that I am making too much of Durning's response; indeed these suggestions deserve in-depth attention beyond the remits of this paper. However, if it is possible to concede that digital images can ignite kinaesthetic responses, it is fair to suggest that we are operating within a posthuman paradigm – whereby the machine and the body do not operate as binaries. Furthermore, the inclusion of Weber's animation within the digital score does not merely offer an enjoyable (kin)aesthetic experience, it also reveals something integral about Hay's process and the rendering of choreographic knowledge. As previously mentioned, the animation follows a lineage of thought from Forsythe regarding inter-disciplinary ways of expressing choreographic principles. The essential components of *No Time to Fly,* articulated in Hay's text-score, are enacted through digital media; the work is

---

[11] See Foster (2011), Reynolds & Reason (2012), Rubidge (2010).
[12] Calvo-Merino et al. (2005).
[13] Described by Apostolou-Holscher as a shift away from text-centred theories (2014).
[14] See Badiou (2005), Gil (2006), Manning (2009, 2013), Portanova (2013).

presented in a form that is neither text-based nor material. The book and the body are both abstracted. So how then are we to read the animation?

Here it is worth turning our attention to theatre studies scholar Maaike Bleeker's discussion of corporeal literacy (2010). Following Alva Noë's work on perception (2004), Bleeker suggests that perception is performative, that it involves the whole body. She outlines the way in which traditional methods of conceiving literacy, related to language and printed words, are associated with a 'condition of disembodiment' (Bleeker, 2010:40). She suggests that this is challenged through communication technologies that allow for 'embodied interaction' (2010:40), drawing attention to the role of the body in perception. Bleeker calls for an expansion of the notion of literacy in order to 'acknowledge the growing importance of communication through means other than the written or printed word, and promote an expansion of our understanding of literacy to include communication through other means as well' (2010:39). The idea of corporeal literacy is of particular importance in dance, where the knowledge gained is rarely fully expressed through spoken or written language. Bleeker suggests that intermedial performance practices foreground the synesthetic and corporeal experience of the spectator. Although watching an animation through a computer screen we may not be cognitively aware of our physical perception, Bleeker, following Noë and Rotman, argues that perception is always of the body. Whilst the scientific approaches previously referred to base responses in the minds of the observer, whereby recognition takes place before a physical response occurs, the notion of corporeal literacy suggests that the body and mind are not distinct and that perception takes place outside of the mind; thus suggesting that whether or not one recognises Weber's animation as a body may not impact on the nature of their response. The animation offers an alternative expression of *No Time to Fly* and the simultaneous presence and absence of the body demonstrates its centrality to Hay's practice. It serves an aesthetic and theoretical function on the site and raises interesting questions about perception. However, a question remains here regarding what, if anything, the animation reveals about choreographic knowledge. This question is sadly beyond the scope of this paper. However, it is one that warrants further consideration.
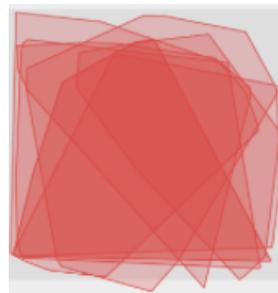
**Diagrammatic forms**

The behaviour body is documented in multiple ways on the website, including through visualisations that record the pathways and 'convex hull' of each of the danced adaptations.

It is explained that 'a convex hull is a shape formed by connecting the outmost points of a dataset like a rubber band that is wrapped around it' (Motion Bank, n.d.).
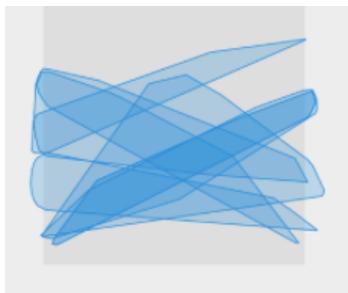
'Convex Hull Ros Warby'          'Convex Hull Jeanine Durning' (Motion Bank, n.d.)

These diagrams allow users to see how each performer covers space differently; for example, Durning generally covers a larger area than Warby. We can also see that each performer follows different pathways and covers differently shaped space in every version of their interpretation. Although small deviations in movement and pathways are inevitable with multiple renditions of any dance work, these diagrams demonstrate difference in more detail. Unlike Laban and Benesh notation, the specific movements of the body are not of concern here. The decision to record the use of space, as opposed to finite structures of movement, highlights the way in which the work does not consist of a repeatable sequence.

Digital media not only allows for the visual realisation of spatial information, it also offers a different form of information to linguistic description or recordings. These diagrams appear to stabilise and objectify information, in this sense they are similar to traditional notational methods; however, they are not created to (re)instance movement. They are representative of action, but generated with aesthetic as opposed to practical motives. Whilst abstracting the three-dimensional behaviour of the body to a flat, diagrammatic form runs the risk of negating the body's complexity – arguably a methodological problem for any form of notating or describing dance – the way that the diagrams are overlaid generates visual complexity, demonstrating aesthetic priorities and a resistance to reductive modes of representation.

Hayles identifies two theoretical moves that may help to clarify the relationship between these diagrams and the movement they embody. The first approach is referred to as 'Platonic backhand'; this method begins by inferring a simplified abstraction from the world's multiplicity (Hayles, 1999:12). Hayles suggests that the problem with this approach occurs when this abstracted version of reality becomes the 'originary form' from which

multiplicity arises (Hayles, 1999:12). This account perhaps describes traditional methods for notating movement, whereby the dance is abstracted into a diagram, which provides a tool for re-embodiment. Hayles points out that the multiplicity that results from a simplified abstraction can appear as a messy version or a 'fuzzing up' of reality, which comes to be represented in an essentialist form (1999:12). Anyone who has attempted to read and embody a Labanotation score may relate to this account. The complexity of activating the body in space can seem to distort the simple 'reality' of the dance on the page.

Hayles' second approach, described as 'Platonic forehand', is more recent and requires the involvement of powerful computers (1999:12). 'Platonic forehand' also starts from simplified abstractions but uses simulation techniques, such as algorithms, to evolve multiplicity from the abstraction (Hayles, 1999). This description relates to the visualisations on *UTS,* which were re-configured from simple abstractions in order to represent the multiplicity of lived experience.

Although these diagrams do not maintain the perceptual presence of the body, they operate under the same framework as Weber's animation. Both approaches abstract and re-activate the body, re-establishing multiplicity, as opposed to offering a simplified version of the non-digital world. It is clear that maintaining features of the body was integral to the rendering of Hay's process. Learned from her bodily 'teacher', Hay's 'choreographic knowledge' is written and shared through digital technology.

**Concluding comments**

This paper has provided an insight into *Using the Sky* and some of the questions it raises. I have suggested that the methods used to create the score demonstrate a commitment to Hay's practice by abstracting and re-configuring the body into digital cells. I suggest that *UTS* is demonstrative of an emergent interest in documenting dance works in accordance with authorial intention and in a manner that prioritises choreographic process, alongside other intangible features. This is evident through the design of the site, the use of various forms of media, and the methods used to re-present movement. Further, I claim that the expansion of the body into various digital forms dissolves binary oppositions regarding the physical and the virtual and reflects the perspective of a posthuman paradigm, offering alternative forms of scoring and reading dance.

# References

Adshead-Lansdale, J., (ed.) (1999) *Dancing Texts: Intertextuality in Interpretation,* London: Dance Books

Adshead-Lansdale, J., (ed.) (2008) *Decentring Dancing Texts: The Challenge of Interpreting Dances,* New York: Palgrave McMillan

Apostolou-Holscher, S., (2014) 'Choreography as Form, as Dance, as an Activity', *FKW Journal,* 55, pp. 79–89. Available from https://www.fkw-journal.de/index.php/fkw/article/view/1271 [Accessed: 28 Mar 2014]

Auslander, P., (1999) *Liveness: Performance in a Mediatized Culture,* London: Routledge

Badiou, A., (2005) 'Dance as a Metaphor for Thought' in *Handbook of Inaesthetics,* California: Stanford University Press, pp. 57–71

Barthes, R., (1977) 'The Death of the Author'. In *Image, Music, Text.* Great Britain, Fontana Press, pp. 142–149

Birringer, J. (2013). What score? pre-choreography and post-choreography. *International Journal of Performance Arts Digital Media.* 9(1) pp.7–13.

Bleeker, M., (2010) 'Corporeal Literacy: New Modes of Embodiment Interaction in Digital Culture'. In Bay-Cheng, S., C. Kattenbelt, A. Lavander and R., Nelson, (eds.) *Mapping Intermediality in Performance*, Amsterdam: Amsterdam University Press, pp. 38–43

Burrows, J., (2010) *A Choreographer's Handbook,* Oxon & New York: Routledge

Calvo-Merino, B., et al. (2005) 'Action Observation and Acquired Motor Skills: An fMRI Study with Expert Dancers' in *Cerebral Cortex* [online] (15) 1243, p. 1249. Available from http://eprints.ucl.ac.uk/3041/1/1243.pdf [Accessed: 18 Aug 13]

Cvejic, B., & A.T. De Keersmaeker, (2012) *A Choreographer's Score: Fase, Rosas danst Rosas, Elena's Aria, Bartok,* New Haven, Conn & London: Yale University Press

Davies, D., (2009) 'The Primacy of Practice'. In *The Journal of Aesthetics and Art Criticism,* 67 (2), pp. 159–171

deLahunta, S., (2013) *Motion Bank Score Release.* [Presentation]. Dusselfdorf, Germany Dixon, S., (2007) *Digital Performance: A History of New Media in Theatre, Dance, Performance Art and Installation,* Massachusetts: MIT Press

deLahunta, S., (2014) 'Publishing Choreographic Ideas: Discourse From Practice' in *Tanz & Archive: ForschunsgReisen, Heft :Mobile Notate,* Epodium Verlag. Muchen. pp. 14–21

Forsythe, W., (2008) 'Choreographic Objects'[Online]. Available from http://synchronousobjects.osu.edu/media/inside.php?p=essay [Accessed: 25 Mar 13]

Forsythe, W., et al. (2009) *Synchronous Objects for One Flat Thing, reproduced* [online]. Available from http://synchronousobjects.osu.edu/media/inside.php?p=essay [Accessed: 25 Mar 13]

Foster, S. L., (2011) *Choreographing Empathy: Kinaesthesia in Performance,* London: Routledge

Foucault, M., (1984) What is an Author? In Rainbow, P. (ed.) *The Foucault Reader.* New York: Pantheon, pp. 101–120

Gil, J., (2006) 'The Paradoxical Body' in *The Drama Review* 5 (50), pp. 21–35

Goodman, N., (1976) *Languages of Art: An Approach to a Theory of Symbols,* Indianapolis: Hackett

Greco, E. | PC & Amsterdam School of the Arts (2004–07) *Capturing Intention* [research project]. Available from http://insidemovementknowledge.net/context/background/capturing-intention/ [Accessed: 20 Dec 2013]

Hay, D., (no date) *The Deborah Hay Dance Company* [Online]. Available from http://www.deborahhay.com/index.html [Accessed: 16 July 2013]

Hay, D., (2000) *My Body, The Buddhist,* Connecticut: Wesleyan University Press

Hay, D., (2013) 'The Continuity of Discontinuity: Readings About Non-linear Learning', [Presentation], Dusseldorf, Germany

Hayles, N.K., (1999) *How We Became Posthuman: Virtual Bodies in Cyberetics, Literature and Informatics,* Chicago: University of Chicago Press

Hutchinson Guest, A., (2005) *Labanotation: The System of Analysing and Recording Movement: Fourth Edition,* New York, Oxon: Routledge

Leach, J., (2013) 'Choreographic Objects'. In *Journal of Cultural Economy* [online]. Available from http://www.tandfonline.com/doi/full/10.1080/17530350.2013.858058#.UtUIjKV5ifQ [Accessed: 20 Dec 2013]

Leach, J., S. deLahunta, & S. Whatley, (2008–2009) 'Choreographic Objects: Traces and Artifacts of Physical Intelligence' [research project], part of *Beyond Text* (2008–14) UK: AHRC

Manning, E., (2009) *Relationscapes: Movement, Art, Philosophy,* Cambridge, MA Massachusetts Institute of Technology

Manning, E., (2013) *Always More Than One: Individuation's Dance,* Durham and London: Duke University Press

Martin, J., (1933/1983) 'Metakinesis' in Copeland, R. & M. Cohen, (eds.) *What is Dance?,* Oxford, New York, Toronto, Melbourne: Oxford University Press, pp. 23–28

Martin, J., (1989) *The Dance in Theory*, Princeton: Princeton Book Company
McGregor, W., & Random Dance (2012–13) *Enhancing Choreographic Objects* [project].
Available from
http://www.randomdance.org/r_research/current_projects1/current_projects/enhancing_chore
ographic_objects_echo [Accessed: 20 Aug 13]

McFee, G., (1992) *Understanding Dance,* London: Routledge Motion Bank, (n.d.) *Using the
Sky.* [Online]. Available from
http://scores.motionbank.org/dh/#set/sets [Accessed: 16.07.2013]

McFee, G., (2011) *The Philosophical Aesthetics of Dance: Identity, Performance and
Understanding,* Hampshire: Dance Books

Noë, A., (2004) *Action in Perception,* Massachusetts: MIT Press

O' Shea, J., (2010) 'Introduction'. In O'Shea, J. and A. Carter, (eds.) *The Routledge Dance
Studies Reader: Second Edition,* London, New York: Routledge

Pakes, A., (2009) 'Choreography, Practical Knowledge and Practice-as-Research'. In
Butterworth, J., and L. Wildschut, (eds.) *Contemporary Choreography: A Critical Reader*,
London and New York: Routledge, pp. 10–22

Paxton, S., (2008) *Material for the Spine,* [DVD] Brussels: Contradanse Phelan, P., (1993)
*Unmarked: The Politics of Performance,* London: Routledge

Portanova, S., (2013) *Moving Without A Body: Digital Philosophy and Choreographic
Thoughts,* Cambridge, MA: Massachusetts Institute of Technology

Remshardt, R., (2010) 'Posthumanism'. In Bay-Cheng, S., C. Kattenbelt, A.Lavander, and R.
Nelson, (eds.) *Mapping Intermediality in Performance*, Amsterdam: Amsterdam University
Press, pp. 135–139

Reynolds, D., & M. Reason, (2012) *Kinaesthetic Empathy in Creative and Cultural
Practices,* Bristol: Intellect

Rotman, B., (2008) *Becoming Beside Ourselves: The Alphabet, Ghosts and Distributed
Human Being,* Durham and London: Duke University Press

Rubidge, S., (2000) 'Identity and the Open Work'. In Jordan, S., (ed.) *Preservation Politics:
Dance Revived, Reconstructed, Remade* (London: Dance Books), pp. 205–215

Rubidge, S., (2010) 'Understanding in Our Bodies: Nonrepresentational Imagery and Dance'
in Degrés: Revue de synthèse à orientation sémiologique: Dance Research and Transmedia,
(141). Available from: http://www.sensedigital.co.uk/writing/UrbinoDgrsWeb.pdf
[Accessed: 10 Aug 13]

Thomasson, A., (2005) 'The Ontology of Art and Knowledge in Aesthetics' in *Journal of Aesthetics and Art Criticism*, 63 (3), pp. 221–229

Van Imschoot, M., (2010) 'Rests in Pieces: On Scores, Notation and the Trace in Dance' in *What's the Score? Publication on Scores and Notation in Dance* [online]. Available from: http://www.sarma.be/oralsite/pages/What%27s_the_Score_Publication/ [Accessed: 16 July 2013]

Wenger, E., (1998) *Communities of Practice: Learning in Doing: Social, Cognitive and Computational Perspectives*, Cambridge, UK: Cambridge University Press