

Duration, Spacetime and Collective time: How Choreographic Practice Reveals Multiple Temporal Realities.

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Declaration

This dissertation is submitted in partial fulfilment of the requirements of the award of BA (Hons) Dance / Choreography at Falmouth University.

I confirm that, except where other sources are acknowledged, this project is my own unaided work, and that no material is included from a degree which has previously been conferred on me.

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Introduction

One of the most difficult aspects of our current culture is that we are pressured in so many ways to assume there is one and only one 'real' way of knowing our world (Williams 2014: 34)

Instead of time conceived as a homogenous medium, which marches onward in a linear fashion, we are often bound up with multiple times (Shalson 2012).

In researching the relationship between choreography and time (choreography, in this case, taken to mean the practice of creating dance), the breadth and complexity of connections suggested a multiplicity which could not only be explained by the wide scope of the subject area. I propose that this is evidence of many different concepts and phenomena which are commonly grouped under the single term 'time'. All attempts to pin down the nature of time and our experience of it, from philosophy to physics to psychology, have yet to yield a definitive answer which all experts agree on. While choreography is clearly not going to provide this answer, it can arguably be a useful tool for exploring the realities of time from a different approach.

Dance is widely held to be a temporal art form, and choreographic considerations such as rhythm, repetition, speed and synchronization appear in most, if not all processes of creating dance (even if they are not used, this is a choice in itself). In addition to the use of time as a device or even a subject matter, however, time and beliefs about the ontology of time pervade everything from the longer term structure of the choreographic process to the quality of attention in a fraction of a second. Peggy Phelan describes the fundamental

relationship between the dance and understanding time and space: 'Dance frames the body performing movement in time and space. While it is true that bodies usually manage to move in time and space, dancing *consciously* performs the body's discovery of its temporal and spatial dimensions' (Phelan 1996: 92, emphasis in original).

As choreography is such a diverse practice, it can relate to many different philosophies of time. Although choreography could potentially contribute to the philosophical debate about whether time exists at all as a separate entity or is merely a human construct (temporal realism and idealism), I have taken the advice of Israeli philosopher Yuval Dolev, who suggests that 'our goal should be to leave behind the question of the reality of time altogether, in favour of a closer examination of temporal experience' (Bardon 2013: 173).

As well as a practical motivation to limit the scope of this study to a manageable area, this is also a decision based on the need to value the lived experience and phenomenological approach which seems so relevant to choreography - 'we are by now so accustomed to the cult of expertise that the very notion of honouring and paying heed to our directly felt experience of things...seems odd and somewhat misguided as a way to find out what's worth knowing' (Abram 2011: 4).

The first chapter explores this lived experience of time and its consideration in choreographic practice, focussing on duration, and the idea of the present. Chapter 2 examines spacetime, directionality and responsive time— whether space and time are considered separately or together, the direction or movement of time, and how we influence time as well as time influencing us. The third chapter then asks the question, if our experiences of time are so subjective, how does anyone (including choreographers)

coordinate activities with other people? Social and relational approaches to a shared sense of time are examined, and the implications of these.

Chapter 1: Duration and the Lived Experience of Time

In modern Western culture, the dominant philosophy of time is abstract, linear, homogenous and absolute (Griffiths 1999). It is analysed more often through the language of mathematics than through sensory-motor perception. In contrast, the lived experience of time is changeable, subjective, and formed from a complex interaction of many different modes of time perception.

The way we perceive and experience time is not fully understood, and scientists agree that 'there is no single organ to monitor time' (Aveni 2000: 29). As there has been extensive research into time perception, particularly in psychology, biology and neuroscience, the lack of a single system of time perception could be further evidence for multiple realities of time. To understand what some of these aspects of time might be, I will start by examining the inherent temporality in the functioning of the human body, which is particularly relevant to choreographers who (mostly but not always) use the human body as their medium. All biological processes in the body take a certain amount of time:

At the short end of the time spectrum, there is the 1/10 –second oscillation of brain waves on an electroencephalogram, the 1-second basic cardiac rhythm, the 6-second respiratory cycle, and the various sleep stages leading up to the 24-hour sleep-wake period. Our body temperatures also fluctuate on a twenty-four-hour cycle, being highest toward evening and lowest toward morning. At the longer end of the time scale lies the 28-day menstrual cycle and the vestige of a 365-day cycle of hibernation. (Aveni 2000: 29).

One interesting thing to notice about these patterns is that they are all cycles or oscillations through two or more different states. As well as indicating a cyclical or repetitive component of the body's experience of time, oscillation is the means by which all timekeeping devices measure time (Aveni 2000: 7). A clock can be defined as 'a physical

object that exhibits a regular periodic movement...that is, movement that returns back to its original state' (Callender and Edney 2001: 12)

In his book *Empires of Time*, Anthony Aveni talks about the idea that time is movement between two extremes, and we measure it by sensing these different states. He describes anthropologist Edmund Leach's analysis of certain Greek myths illustrating 'the mobile element of time, the "becoming" that causes things to oscillate between two extremes of existence.' (Aveni 2000: 63). This idea of a movement of 'becoming' is echoed by philosopher and movement artist Erin Manning, who describes movement as 'a process of individuation where matter and form remain in flux, virtually shape-shifting into malleable environments' (Manning 2009:29)

The other major temporal experience of the body is the journey from birth to death, which could be viewed as linear, or part of a larger cyclic pattern of creation and destruction, depending on the beliefs held about life and death. But whatever the pattern, this too has a sense of time passing or change which is primarily biological in origin - controlled largely by the pineal gland in the brain, which 'times major phase changes, like night and day, seasons, puberty, menopause, and maybe death' (Betts 2005: 44).

In the field of somatics, which is closely allied with dance and choreography, Bonnie Bainbridge Cohen also talks about time as transition and change, focussing on sensory awareness – spending time sensing the transitions of fluids in the body, the change from stillness to movement, the impulse of the heartbeat. 'When we make a change we are distinguishing time' (Bainbridge Cohen 2004).

To take this idea further, the processes of the body, which display such recognisable patterns associated with time, could be taken to support the idea that time is change, and change is movement, therefore movement is an essential part of the experience of time. So the lived experience of time is not only highlighted in choreography by interaction with the body's time, but also by working with movement itself.

All philosophies of time deal with ideas of movement in some way (Bardon 2013, Callender and Edney 2001). One philosopher whose ideas often seem to be particularly resonant for those thinking about choreography is Henri Bergson. Bergson wrote extensively about time, and his ideas on duration are perhaps a more useful and accurate way of describing the lived experience of movement and change than the word 'time'. Supporting these ideas of time, change and movement, Bergson 'invited us to consider the real act of moving, the happening of what happens (*ce qui se fait*) and asked us to construe movement in terms of qualitative change, not as change that we measure after the fact and map onto space' (Guerlac 2006: 1). Although Bergson's duration is too complex to be fully explored here, or to be reduced to purely the idea of movement and change, it is significant that he describes duration as 'pure mobility' (Bergson 2007: 138) and speaks of 'life as perpetual change' (Guerlac 2006: 6)

'Duration', outside of Bergson's usage, more commonly means 'the time during which something exists or lasts' (Merriam Webster N.d.) and is also associated with durational performance. In the issue of the journal *Performance Research* dedicated to duration, Edward Scheer explains two meanings – the common usage, and another interpretation intrinsic to durational art which is closer to Bergson's duration:

The phrase 'durational art' implies a specific construction of time, a deliberate shaping of it to effect a particular experience for the viewer or the audience ...Yet durational art has another quality that invokes the flux of temporal experience, the quality of time experienced in the doing of an action rather than simply the quantity of chronological time that a task might consume.(Scheer 2012: 1).

Many choreographers implicitly or explicitly use the more experiential version of duration.

For example Deborah Hay, in her score for her performance work *No Time to Fly*, sets the duration of a song not by an amount of chronological time but 'by how much time is required for it to impress itself on my body and the audience's memory. The phrasing of the song can expand and contract' (Hay 2010: 6).

Taking time for things to happen in their own timing or duration is a way of working that defies the homogeneity of chronological time, but is widely understood by choreographers.

Even those who work with very precise ideas of clock time, like Merce Cunningham did, have to acknowledge that the timing of physical processes (such as movement of the human body) have to obey the laws of physics and biology. Cunningham speaks of this as a limitation, which can be transcended by technology: 'you can see something and you can change it, with the dancers – but you have to give them a rest, and with the computer, doesn't matter how many times you do it, it doesn't get tired' (Silver 2009).

Other choreographers integrate the body's experiential time into their work, often as a source of inspiration, or a process of exploring what it means to be alive and corporeal.

Anna Halprin's approach of 'experience as dance' meant that she integrated the experience of ageing and illness into her choreographic work. 'Movement performance as a mechanism for survival was not just a theory but a deeply embedded practice for her' (Ross 2009: 338).

For artist such as Halprin, and many Butoh artists, ideas of ageing and decay are ways of addressing the temporality of human life and death in a way which again connects with Bergson's duration:

Bergson argued that our experience of duration is internal, continuous and interpenetrating. Duration, for Bergson, is of the body. Rather than a series of quantitatively separable points on a line, it is qualitatively multiple and interpenetrating. It is the body's ability to 'gather' impressions rather than merely counting them in succession that constitutes duration. (Bergson, cited in Shalson 2012: 101).

Cornwall based choreographer Angela Praed works with 'themes of sexuality, decay and endurance' (Angela Praed Dance N.d.). Her piece *Duets for Unusual Souls* is based on the 1930s dance marathons, and 'celebrates our human capacity to endure and triumph' (ibid.). As well as dealing with time, like Halprin, by considering lived experience or duration in the content of her work, Praed confronts conventional Western chronological time in her working methods as well. Letting things have their own duration is key in her creative process. 'Work evolves over years, not weeks. Some key dancers Angela has worked with for over ten years and seeing how the body grows with the processes is a vital part of her work'(ibid.). This also extends to giving the audience 'time and space to sink into the work' (ibid.).

It is significant that the audience experience of watching dance is considered in relation to time, as there are some interesting properties of visual movement observation which raise questions about time perception, in particular the existence of a 'present' or 'now'. There have been many neurological and psychological studies about time perception and cognition but I will discuss one example which seems particularly relevant to movement. The 'flash-lag effect' is where 'an intermittently flashing color filling a moving circle is seen as a mere crescent, while the circle is seen in its entirety... one's perceptual apparatus

anticipates the trajectory of moving objects and registers them as ahead of their actual position' (Bardon 2013: 45). One of the implications of this, and other similar experiments, is that what we consider to be 'now' is shifted depending on the perceptual and cognitive processes being used to perceive it, as well as the situation being perceived.

Considered this way, the present, in the lived experience of time, *is* a state of attention (rather than a state of attention caused by an external present). This could be one reason why there is no comprehensive agreement on what, if anything, the present actually is. Some choreographic and performance practices and also Eastern philosophies propose an ability to change the experience and perception of the present through different states of attention, such as meditation (Capra 1983). Deborah Hay describes manipulating her attention to time and space as an alternative means of creating complexity in performance: 'complexity arises. I play havoc with how I perceive time and how I perceive space rather than creating complex body movement' (Hay 2010: 8).

Despite this ability to manipulate the sense of the present, a feeling of a qualitatively different present is certainly part of the lived experience of time. 'A personal sense of time is based on a representation of the real-time present that allows the agent to distinguish it from the past and the future, and is continuously changing to reflect the progression of time' (Haythem and Shapiro 2001: 1). Cunningham describes this present as a succession of instants, which, as I will discuss later, implies a directional sense of moving through time from past through present to future, which is characteristic of Western thought. 'Dance is most deeply concerned with each single instant as it comes along, and its life and vigor and

attraction lie in just that singleness. It is as accurate and impermanent as breathing’ (Cunningham, cited in Kam 2005).

In contrast, Deborah Hay speaks of the past and future both being available in the present: ‘The ancient voice is me from 10,000 years ago or from 10,000 years in the future – a compassionate voice bringing the experience from the past or from the future into the present’ (Hay 2010: 2). This is closer to Husserl’s ‘three-dimensional’ view of the present, which ‘for him, is not the nondimensional point of the instantaneous now...The past is retained *as* past in the present, and the future is anticipated *as* future in the present’ (Dostal 1993: 146-7).

This model is similar to the idea in physics of ‘light cones’, where any point in the space-time continuum is defined by all the possibilities in the past converging on that single point, and all possibilities in the future radiating out from it through space and time. This is expressed visually as two three-dimensional cone shapes converging at their narrowest ends (Hawking 1996, Callender and Edney 2001). In choreography and performance this can be understood by the moment of performance being defined by all the preparation leading to that point – not just the creative process and planned choreography or improvisational structure, but the entire history of each individual which is carried in the body. ‘The past is, as it were, sedimented in the body’ (Connerton, cited in Ross 2009: 244). And for each individual the attention and actions in the present will create different future possibilities. This idea of an individual journey through space and time takes us to the next chapter which will discuss the disconnection or connection of space and time, and directionality of movement in or of time.

Chapter 2: Spacetime, Directionality, Responsive Time

Classical physics was based on the idea of 'time as a separate dimension' which is 'absolute and flows at an even rate, independent of the material world' (Capra 1983: 177). Although this idea still remains prevalent in Western thought, modern physics since Einstein's theory of relativity has fundamentally changed ideas of space and time. 'We must accept that time is not completely separate from and independent of space, but is combined with it to form an object called space-time (Hawking 1996: 34). In this conception, the universe is made of three spatial dimensions and one temporal.

Preceding the separation in classical physics, David Abram identifies the disconnection of space and time with the development of written language (1996), and there is evidence of many oral cultures for whom time and space have never been separate concepts. For example, the Karen tribe 'always know where they are and when they are, how far they are from sunset or home: for time and distance are connected in the Karen language' (Griffiths 1999: 4-5). Phenomenology also reconciled time with space philosophically. Merleau-Ponty makes clear the relationship of this reconciliation to the body and sensory perception: 'this very time that is space, this very space that is time, which I will have rediscovered by my analysis of the visible and the flesh' (cited in Abram 1996: 205).

There is evidence in psychology also of our innate thinking of time and space together.

Claudia Hammond explains some of the psychological research into this connection:

Our perception of time is influenced by the language we speak, the direction in which we read words on a page, our moods and even our position on a journey. Our sense of time travel in space is profound... If people are asked to envisage a typical day four years ago while standing blindfolded, they begin to lean back a few

millimetres without even realising it. When they imagine a typical day four years into the future they lean forwards....What this tells us is that time and space are embodied (Hammond 2012: 143).

Possibly because of the non-written, and embodied nature of dance, and the link between time and space evidenced above which remains in the body despite a culture of thought which separates them, many choreographers consider time and space together. For example Deborah Hay uses the Western tradition of naming time and space separately, but very often speaks about them together in the same sentence, implying their connection (Hay 2000 and 2010). Erin Manning goes a stage further and sometimes uses the term 'space-time' (Manning 2009). Merce Cunningham makes the connection more clearly: 'the fortunate thing in dancing is that space and time cannot be disconnected, and everyone can see and understand that' (Cunningham 1952: 18).

According to both Jay Griffiths and David Abram, the sense of combined spacetime is essential for understanding our presence in the world. Abram also gives the idea a sense of movement:

There is no aspect of this realm that is strictly temporal – for it is composed of spatial things that have density and weight, and is spatially extended around me on all sides, from the near trees to the distant clouds. And yet there is no aspect, either, that is strictly spatial or static – for every perceivable being, from the stones to the breeze to my car in the distance, seems to vibrate with life and sensation. In this open present, I am unable to isolate space from time, or vice versa. I am immersed in the world (Abram 1996: 204).

What Abram so poetically explains is that a sense of four-dimensional spacetime, while often used to support a static theory of time and space, can be reconciled with the fundamental human experience of movement through or of time. This is echoed by Deborah Hay, again showing an example of a choreographer understanding concepts of time which

are philosophically and scientifically challenging. 'What I mean by my perception of time is that it its passing. And what I mean by my perception of space is that I include it in my dancing so that I am not seduced by the intelligence, past experiences, patterns, limitations, and/or sensuality of my moving body' (Hay 2010: 8).

This movement or directionality of time can be seen as an ordering of events. As Einstein famously said, 'the only reason for time is so that everything doesn't happen at once' (cited in Space.com 2013). The notion of the 'arrow of time', of time moving in a particular direction, is described in physics as comprised of three elements. The cosmological element, which is the idea that the universe in its entirety is moving in one direction. The thermodynamic arrow of time, which is the law that states everything in the universe moves ultimately from a state of order to chaos (entropy), and the psychological arrow of time – our experience of time passing (Hawking 1996) .

This can also be interpreted in the sense of the narrative. 'Narrative shapes experience in time; it ties beginnings to endings...birth and death, breathing in and out, confer shape on our existence and already suggest the seeds of narrative form' (Tufnell and Crickmay 1993: 98). Peggy Phelan explains the link between narrative and our need for temporal order as related to psychoanalysis, and the inherent narrative in dance even without a traditional narrative content or structure: 'In many traditions and diverse cultures, dance takes narrative forms. For one of the things that narrative generates is temporal order. But even without narrative, dance organizes its movement across a temporal schema. And in this sense, dance, like psychoanalysis, helps join the body to time' (Phelan 1996: 92). When working with the body and physical processes, it is also undeniable that the order of events or actions changes their effect. For example, a warm up before class or rehearsal would not

have the same benefits of preparing the body for movement if it was executed after class instead.

There are many different ideas of the shape of our movement in time, or the movement of time itself, with the most familiar being linear and cyclical. 'The modern western view of time is linear, moving like a ruler straight from past to present to future and in this it is highly unusual' (Griffiths 1999: 118-9). Some choreographers view time in a more cyclical way, for example Anna Halprin's creative method of RSVP cycles. This uses four stages of resources, score, valuation and performance which all feed into each other (Ross 2007). Merce Cunningham also acknowledges the influence of each stage of the creative process on subsequent work, but describes it in a more linear way, with an implication of an end goal to be reached. 'My work has always been in process. Finishing a dance has left me with the idea, often slim in the beginning, for the next one. In that way, I do not think of each dance as an object, rather a short stop on the way' (Cunningham 1952: 21).

According to Jay Griffiths, the shape of time is linked to ideas of gender. 'linear time is phallic, male in shape, cyclical time is yonic and female in shape as women's bodies have cycles. Further, the way time is pictured, or described, in any age, mirrors remarkably closely the way the feminine is treated then' (Griffiths 1999: 119). The idea that dance and choreographic practice could include both a sense of linear and cyclical movement in time gives it the potential to reconcile the 'male' and 'female' elements. A dialectic of cycles and lines produces a spiral shape, and given the embodied connection between the direction of

time and spatial orientation of the body, could this be affirmed by the spirals of the body (for example as described in some yoga practices) and spiral pathways of much of contemporary dance (for example flying low technique)?

With the idea of direction through time comes the idea of progress and novelty, which has arguably driven much of modern, postmodern and contemporary dance – the desire to break boundaries, to create something new. But progress would not be viewed in the same way in cultures with a less linear sense of time:

Progress is only an idea, a mental construct, but is treated as if it had the status of concrete fact, as if the march of progress had a sort of absolute inevitability and preordained certainty. It is a specific idea: Western, money-oriented, technologically-biased and racist in its history and its effects, but it pretends to universality, so that all peoples must be made to define and embrace progress in exactly the same way. (Griffiths 1999: 184).

The tendency to adopt a post-colonially exotic view of dance in ‘other’ cultures has led to a view of traditional dance which implies a lack of progress or change. However, there is evidence that in many cultures, dances are performed in a more traditional manner for the benefit of tourists and outsiders, and as part of the community they change and develop (Foreman 2001: 386). A study of indigenous dance in the Philippines illustrates this: “These dances are not done as a performance art,” says Yabut. “They are done as part of the life cycle of the community: a healing ritual, a death ceremony, a harvest or a celebration. It is a living culture. They are involved in creating new songs, new dances, in response to their actual living conditions’ (ibid.).

The difference with this version of change is that it is *responsive* change, in relationship to others, to community, to environment. This is the role that dance plays in many cultures.

The abstraction of dance and choreography can be linked culturally to the abstraction of time and space. In this way, examining dance can reveal a lot about a culture's time. In the same way that choreography can have a dynamic, reciprocal relationship with the culture it is in, the relationship with time can also be reciprocal. In Native American cultures 'the concept of time is dynamic and animate and there is a sense of deep exchange between humans and time' (Griffiths 1999: 8).

According to Stephen Hawking, 'space and time are now dynamic quantities: when a body moves, or a force acts, it affects the curvature of space and time – and in turn the structure of space-time affects the way in which bodies move and forces act' (Hawking 1996: 44).

Although the effects of this are usually measured and discussed in physics when relating to very large bodies (such as stars or planets), could this idea apply on a smaller scale to human movement? This would mean that choreography and dance are fundamental ways to engage with this reciprocal relationship between our actions and time. Erin Manning supports this view, saying that 'events take form in the concreteness of time and space. This does not mean that time and space precede them. Quite the contrary: events *create* time and space' (Manning 2009: 7).

In *Dance, Space and Subjectivity*, Valerie Briginshaw talks of the importance of the body in not just the experience but even the creation of space: 'It is by means of the body that space is perceived, lived - and produced' (Briginshaw 2001: 4). If this statement is true then the same could be said of time. From this point of view, choreography could be crucial in our understanding of this reciprocal relationship.

Chapter 3: Collective Time

Post-structuralist critique of language takes the view that 'language makes dialogue possible, but only on condition we use it appropriately, subscribing to the meanings already given in the language that always precedes our familiarity with it' (Belsey 2002: 3). This analysis could also be applied to the use of time. If the perception and lived experience of time is so varied and individual as shown in Chapter 1, and there are multiple interpretations of the nature and directionality of time as shown in Chapter 2, as well as the instability implied by our reciprocal and dynamic relationship with time, how does anything happen in time in relation to others? Taking the post-structuralist view, a shared 'language' of time is created, which varies within different cultures, groups and situations.

The use of chronological or 'clock' time has become so dominant globally that it can be unclear sometimes that there is any alternative. It often gets portrayed as objective time, whereas in reality, 'to say any one time is *the* time is both untrue and highly political' (Griffiths 1999: 2). I propose that choreography has the potential to expose this as just one of many shared constructs of time. These I will term 'collective' time, to highlight the fact that they are neither purely subjective nor objective, but rely on the cooperation and coordination of many different conceptions of time.

Clock time has become ever more precise, abstracted and mathematical. 'We have not been content to allow ourselves to float about aimlessly on the waves of nature's ocean of time. We want to count the waves, to classify them, to package them neatly into recognizable patterns' (Aveni 2000: 88). One reason for this is a fear or inability to deal with the multiple realities of time, and with its changeability. Bergson 'suggests that our static conception of

time is a defence against the heterogeneity of the real' (Guerlac 2006: 2). David Abram explains it in terms of an attempt to escape or not acknowledge the 'difficulty' of corporeal life (Abram 2011: 6), which means that dance and choreography could be a way of addressing this.

The attempts to create a shared system of timekeeping have not necessarily always been altruistic or beneficial. Time has been used as a means of political and social control, for example the introduction of Coordinated Universal Time which gave certain countries advantages over others in the mapping of time (Griffiths 1999). In choreography, it is worth considering what political and cultural statement it makes to adhere to a particular temporal framework. What difference does it make if we count in seconds on a stopwatch or in heartbeats or the beat of a drum? Erin Manning believes dance can provide new perspectives to systems of thought:

'The dancer's body...provides a glimpse into the ways in which movement creates the potential for unthinking dichotomies that populate our worlds: abstract-concrete, organic-prosthetic, alive-dead, mind-body, actual-virtual, man-woman. It's not that movement directly undermines these dialectical concepts. It's that movement allows us to approach them from another perspective: a shifting one' (Manning 2009: 25-6).

Performance artist Victoria Gray explains how her approach to performance and time 'subverts the often distracting temporality of capitalist frameworks with which we are already entrenched'. These she defines as 'procedural systems of production and consumption that control one's experience of time, the body, and ultimately one's subjectivity according to criteria's of efficiency, productivity, performance management and accountability. (Gray 2013: 178). The maxim 'time is money' (Griffiths 1999) is also apparent

on the pressure for choreographers to create within a timeframe essentially determined by economic concerns.

But working creatively, and with the body does not necessarily fit easily into such time pressures. Angela Praed's approach to time is again implicitly subversive here. She takes time for relationships to develop - 'relationships with promoters, artists, participants and audiences are often cyclical in nature and long term' (Angela Praed Dance n.d.). She also does not audition dancers, as is common in contemporary choreography, but collaborates with people she has met and worked with, and describes 'very close friendships, very trusting relationships between the people that I collaborate and work with' (Praed 2010). Jay Griffiths also believes that 'personal relationships need to develop over time, with time, and speed destroys them, even while providing a substitute' (Griffiths 1999: 33).

The integration of choreographic practice with the rest of life is often a negotiation of time. The professional choreography and dance world is well known for being very demanding in the amount of time it requires from an individual. Consider, for example, the decision of a dancer or choreographer to become a parent. Both roles are massively time-intensive and choices must be made about the allocation of time to either. The contrasting treatment of this situation by Angela Praed and Merce Cunningham illustrates the wide range of possible outcomes. According to Daniel Squire, who danced in Cunningham's company for 11 years, 'in that whole time nobody who left the company to have a child returned', citing the impossibility of managing to look after a child and fulfil the demands of the company as the reason for this (Squire 2014). On the other hand, Angela Praed says 'I have lots of time where I go away and have nothing to do with dance and I'm just a mother... and just focus on that for a while and then the time is right to come together again for another

development' (Praed 2010). Deborah Hay expresses an awareness of the connections between the practice of dance, and relationships to time, space, self and other with the question 'what if dance is how I practise my relationship with my whole body at once in relationship to the space where I am dancing in relationship to each passing moment in relationship to my audience?' (Hay 2010: 1).

An alternative system for collective time is to do with rhythm, and *timing* as opposed to time. Much of the synchronization within the content of choreography is based on a sense of rhythm. Although this is often to do with the music, choreographers such as Cunningham who have separated dance from its temporal reliance on music, have shown that dance and movement has its own rhythms and timings.

Cunningham used chronological time in almost every aspect of his work, and used stopwatches to train his dancers to have a sense of time independently of music (Squire 2014,). One particular work, *Ocean*, had huge clocks around the performance area for musicians and dancers to watch while performing, attempting to keep to its exact timing, and the lights went out exactly at 90 mins. Although this could be interpreted as an extreme form of control, a rejection of other forms of time and timing, Cunningham explains this obsession with clock time as a way of finding freedom in form:

'if one can think of the structure as a space of time in which anything can happen in any sequence of movement event, and any length of stillness can take the place, then the counting is an aid towards freedom, rather than a discipline towards mechanization. A use of time-structure also frees the music into space, making the connection between the dance and the music one of individual autonomy connected at structural points. The result is the dance is free to act as it chooses, as is the music' (Cunningham 1952: 19-20).

Merce Cunningham was also influenced by Einstein's theories – 'a favorite quotation of Cunningham's, [was] Albert Einstein's statement, "there are no fixed points in space"' (Merce Cunningham Trust 2014). Cunningham used this idea to inform his use of space in performance, 'dismantling the notion (derived from Renaissance perspective and the proscenium stage) that the actions of dancers radiate from a central point'. This was also applied to time in performance, as Cunningham rejected the traditional narrative timing. However, it was not so easy to deconstruct the temporal context of a performance. Although an attempt was made in staging 'happenings' in unusual locations and in a less formal context than traditional performance events, a significant time and location has to be set in order for an audience to be present to witness a performance.

The issue of collective time is often one of relationships between self and other. For example the use of unison in choreography - 'The dancers in the corps de ballet should give no sign of their individuality; rather, they should strive to move as one body in 'perfect unison' (Bull 1997, cited in Thomas 2003: 100). Even the body's timing is in some respects an interaction between the self and cosmological time: 'the neuro-endocrine clock in the brain has an innate 25 hour rhythm, but is reset every day to Earth time by the rising sun, via the pineal. So this gland, which oversees major life changes, is itself fuelled by our motion in the solar system' (Betts 2005: 48). Choreographic practice involves awareness of not only subjective, objective and collective time, but the meeting points and negotiations between these.

Conclusion

This research has shown that movement and the body are fundamental to the understanding of the lived experience of time, and therefore choreography, as a practice dealing with both movement and the body, is well placed to contribute to the epistemology of time. The breadth of different approaches to time in choreography is evidence of multiple realities of time. The multiplicity of time uncovered by choreography suggests that the term 'time' is erroneous in grouping all these concepts, experiences and phenomena together.

While it has not been possible to cover all of these, through researching the relationship between choreography and time, many different aspects have been uncovered, including the body's time, the experience of the present, the connection of space and time, different ideas of direction and movement in time, collective constructs of time, and our dynamic, reciprocal relationship with time.

The lived experience of time is inextricably linked with movement, the human body, and sensory-motor perception, all of which are part of choreographic practice. A qualitatively distinct 'present' is something which is a very variable but essential part of human temporality, and can be understood in part by the way some choreographers approach attention and awareness of this present moment.

Choreography tends to support the concept of spacetime, as opposed to the separate concepts of space and time which still prevail in much of Western thought. It also provides a way to explore different ideas about movement of and in time, reconciling the four-

dimensional view of the universe with the experience of the passage of time, and potentially reconciling both linear and cyclical views of time. And finally, choreography can subvert and deconstruct the clock-bound social construct of time and propose alternatives to engaging with time in relation to self and other.

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