



ARCHITECTURE AND MOVEMENT

How can dance heighten phenomenological experiences and perceptions in architecture?

Architecture and Movement: How can dance heighten phenomenological experiences and perceptions in architecture?

Kiera Fitzsimons 17021816

BA(Hons) Interior Architecture
University of the West of England

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This study was completed as part of the BA(Hons) Interior Architecture program at the University of the West of England. The work is my own. Where the work of others is used or drawn on, it is attributed to the relevant source.

A handwritten signature in black ink, reading 'Kiera Fitzsimons'. The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Signed: Kiera Fitzsimons
05/02/2021

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Abstract

This dissertation investigates relationships between dance and architecture by placing the two disciplines within the same context. Through a review of theoretical research, dance notation and visual media, this paper argues that bodily movement plays a key role in an individual's phenomenological understanding of their spatial environment.

A case study approach has been used in the second half of this paper to build on the theoretical understanding of how dance and architecture respond to one another, these include a site-specific performance by the aerial dance group BANDALOO and Siobhan Davies Dance Studio by Sarah Wigglesworth Architects. The analysis indicates that dance can increase an individual's phenomenological awareness and has the potential to change the meaning of a place. It can therefore be used as a tool within the architectural design process to increase understanding of embodiment in the built environment.

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Introduction

Architecture and dance are both spatial practices that involve the manipulation, organisation and use of space over time. By combining these two disciplines we can learn about the role of bodily movement in relation to architecture.

This dissertation theorises the relationships between dance and architecture by developing an understanding about how dance can heighten an individual's phenomenological perceptions of designed space. This phenomenological approach to the study of dance and architecture can help us to remember the embodiment of people in buildings that is often forgotten in the production of static architectural representations. Some might say that many contemporary architectural projects are too concerned with the image of the building as a product which results in its best qualities being viewed from afar rather than in its use (Sara, 2015). It is argued here that architecture cannot not be fully understood by sight alone, instead, a combination of all the senses and an engagement with the site by means of movement is required. As Peter Blundell-Jones (2015, p4) states; 'our understanding of space begins with the body,' this raises the question of whether increasing our awareness of movement in the body can improve our understanding of the space around us. Dance can be considered an exaggerated form of bodily movement so by focusing on the combination of architecture and dance, we can investigate the way the body plays a key role in our understanding of space.

The study draws on existing theories to develop an understanding of phenomenology and perception in the context of architecture and dance. It then looks at dance notation and ways of recording the theoretical concepts that could be applied to architectural representation. The final discussion analyses two case studies based on theoretical knowledge gained in previous chapters, these include a site-specific dance performed at Santiago Calatrava's Sundial Bridge as an example of a choreographer's response to architecture and Siobhan Davies Dance Studios designed

by Sarah Wigglesworth Architects as an architect's response to dance. By putting the two disciplines within the same context, this paper aims to bring attention to the movement of the body as an important consideration in the design of spaces and places.

Methodology

This is a subjective study that explores the relationships between the disciplines of architecture and dance, therefore a qualitative approach has been taken to inform the research.

The first section investigates the theories and philosophies surrounding the topic to provide background information and understanding to inform the analysis of the chosen case studies. Themes of perception, phenomenology and kinesthesia have been explored using relevant literature from credible sources and peer reviewed papers to theorise the relationships between architectural space and the experience of bodily movement. A variety of academic literature from across the disciplines of architecture, dance choreography and philosophy have been used to supply multiple viewpoints on the topic to help achieve rigour. Due to the visual nature of dance, media such as film, photography and drawing have also been used to inform the discussion.

A phenomenological approach will be used throughout this dissertation. The ideas of phenomenology developed by the philosophers: Husserl, Heidegger and Merleau-Ponty have influenced many architects and architectural theorists, it is also a way of understanding dance and the relationship between oneself and the surrounding space, therefore phenomenology could provide a direct link between dance and architecture. Phenomenology can be used, “as a ‘way’, a ‘method’ or an ‘approach’ through which the problems of architecture will be discovered and revealed,” (Shirazi, 2014, p.4). It is a self-referential system that cannot be legitimized (Leach, 2005), however, it is a suitable method for a qualitative study and has been widely researched in architectural fields.

The theories give insight into the discussion of two real life scenarios that combine the disciplines of dance and architecture from two different perspectives, the first

being a choreographer's response to architecture and the second an architect's response to dance. Taking this comparative approach has provided opportunities to discuss whether the chosen theories can be applied in different contexts with the objective to expand on the theory and combine the disciplines.

The first case study is a BANDALOOP site-specific performance. This dance was chosen because it is non-narrative meaning the choreographer responds to the site qualities rather than to a story; it reveals the choreographer's interpretation of the site translated into dance. The objective was to create a deeper understanding of the spectator, dancer and choreographer's perception and interaction of the built form when function is removed, and movement is emphasised.

The second case study is Siobhan Davies Dance Studios designed by Sarah Wigglesworth Architects. The discussion of this is informed by theoretical text-based research, visual analysis, architectural magazines and video. It is an Architect's practical response to dance.¹

By approaching the topic from different angles, this dissertation explores the ways in which dance can inform architecture and help to understand our experiences of space by studying dance as an exaggerated form of movement.

1 - Due to Covid-19 restrictions, the research of this case study was unable to be carried out as intended, therefore a desk-based approach was used rather than primary research on site, this does cause significant limitations for a phenomenological study and should be approached with caution.

Theory

Theoretical research needs to be considered to give an overview of relevant literature, the aim is to theorise the relationships between bodily movement and architecture by studying previous research that overlaps the disciplines and to find out whether dance can affect an individual's perception of architectural space.

Throughout history, movement has played a key role in the design and use of buildings, however, the philosophies surrounding the topic have been studied in more recent times. Blundell-Jones and Meagher (2015) writes how movement has shaped architectural form throughout history but implies that this interpretation of space is a relatively new idea to architectural theorists by criticising Classicist theories and the writings of Vitruvius and Alberti for interpreting the body's movement in a very literal sense despite more modern scholars noticing a strong sequential progression when moving throughout their buildings.

It has been suggested that architecture can influence, or even dictate, movement with the placement of thresholds, corridors and staircases (Yudell, 1977), Rachel Sara (2015) argues that architecture cannot determine the way people behave, but instead has an equal relationship with the user. She uses the term, 'mutually constitutive,' (ibid, p. 64) to describe this relationship where dance and architecture overlap on the spectrum between space and event. The body in space creates an event, which in turn influences architecture to a similar degree as architecture influences the body. Bernard Tschumi (1996) uses the metaphor of 'violence' in reference to the confrontation and intense relationship between the ordered geometry of architecture and the users that inhabit it, 'the body disturbs the purity of architectural order,' (ibid, p. 123) and architecture dictates, to an extent, paths of movement via thresholds, staircases and corridors. He concludes that the 'violent' impacts are symmetrical, meaning one does not dominate the other. In his book *Architecture and Disjunction* (1996, p.121) Tschumi writes, 'There is no architecture without action,'

the building becomes functionless without body, program and event. This suggests that the body and intentions of the user defines the space around them, without this, the building becomes functionless and meaningless.

Phenomenology

Phenomenology is a key theory that is often referred to in comparisons between architecture and dance. It is an ontological philosophy that has been defined by Neil Leach (2005) as the study into how phenomena appear, not only visually, but in its nature of existence, being and reality that all contribute to human experience. Since architecture is often abstracted and imagined in a visual way, studying phenomenology helps the designer to remember the reality and truth of the spaces they create. Some theorists such as Henri Lefebvre believe this visually dominant approach to the built environment has been progressing since the invention of perspective drawing in the Renaissance period (Leach, 2005), however, others have suggested that this visual domination has always been there; in Juhani Pallasmaa's book, *The Eyes of the Skin*, (2012) he relates the modern obsession of image to the Greek philosophies of Plato and Aristotle who believe the eyes are the most superior sense.

Maurice Merleau-Ponty's (1945) approach to phenomenology concerned, 'the essence of perception,' (Shirazi, 2014, p.2) and the notion of the body at the centre of the world, this idea rejected Descartes philosophy that the mind is a separate entity to the body and matter (Sara, 2015). It can be argued that Descartes dualism is inconclusive since it does not fully explain how the mind interacts with the material world (Hatfield, 2018). In *Phenomenology of Perception* (2002, originally published in 1945) Merleau-Ponty uses an example of having to move around a cube to comprehend the object with six equal faces to explain that the body and world are one. This implies that an architectural photograph cannot be understood in the same way as inhabiting the building, the act of travelling to and around it produces a rich context that cannot be represented clearly through image. According to Merleau-Ponty (1968), the body does not only inhabit a space but also becomes the space:

‘My body is made of the same flesh as the world [...], and moreover this flesh of my body is shared by the world, the world reflects it, encroaches upon it and it encroaches upon the world.’

(Merleau-Ponty, 1968, p.248)

This quote further supports Tschumi's (1996) idea of a dialogue between architecture and the presence of the body and mind. Jaana Parviainen (1998, cited by Hunter, 2011) reflects on Merleau-Ponty's philosophy, however, does not agree that the world and the body are the same but rather independent and in harmony with one another. Crowther (1993, cited by Hunter, 2011) uses the term ‘ontological reciprocity,’ (ibid, p. 35) to describe this idea of bodies shaping and defining the world by providing direction and measurement. In a site-specific dance investigation carried out by Victoria Hunter in 2011, these concepts were applied by the dancers themselves to create a connection to the site. In the study it was found that by being more actively present and using an exploratory approach to the site, the paths of movement became less conventional and linear in comparison to general improvisation within the same site. This research suggests that a site can produce a creative response in dance that is not predetermined by conventions, however, the dancers required guidance in order to be able to achieve this. This could be helpful in the architectural design process, by suggesting an open, exploratory approach could produce a response that situates itself more harmoniously within its context.

Perception and Kinesthesia

In order to find out how dance can heighten perceptions in architecture, an understanding of perception is needed. Lawson's (2001) definition puts emphasis on the role of the senses that enable us to interpret the world:

‘Perception is an active process through which we make sense of the world around us. To do this of course we rely upon sensation but we normally

integrate the experience of all our senses without conscious analysis.’

(Lawson, B. 2001, cited by Hunter, 2015, p.85)

In Victoria Hunter’s *Moving Sites- Investigating Site Specific Performance*, she suggests that although perception occurs subconsciously and without analysis, it is personal and subject to many variables, such as an individual’s familiarity with a place and preconceptions, meaning that perception is individual and cannot be shared. She argues that a kinesthetic experience can contribute to our perception of space along with sensory, cognitive, spatial, ideological and psychological factors (Hunter, 2015). This concept of kinesthesia is defined by Mark Paterson (2013) as an internal awareness of the feeling of motion. It is the ability to sense the skin, muscle and joint movement and therefore the feeling of weight, discomfort, positioning and physical contact with the world. Designed space is usually intended to be easy to traverse therefore one is less likely to be conscious of how the physical body interacts with points of contact in the built environment. People become more aware of their body in a kinesthetic sense when experiencing some physical discomfort, or a motion that is abnormal.

An individual can become more aware of Kinesthesia during dance as it requires them to focus on the placement and movement of the body more so than in everyday life. Brandstetter, G. et al. (2013) implies that movement can produce emotional responses, ballet, for example, has the ‘illusion of weightlessness’ (ibid. p.4). It is in debate whether a spectator can experience kinesthetic response to watching dance, Dee Reynold’s (2008-2011) research *Watching Dance: Kinesthetic Empathy* explores this idea in a neurological investigation and finds that the levels of empathy can be increased if the spectator has experienced the movement previously.

We have argued here that architectural spaces can be defined by movement, this impacts the way people perceive space through phenomenology and the senses. The research suggests that space is not only perceived visually but as a combination of all senses including the kinesthetic feeling of physical movement. By combining these

theories of phenomenology and kinesthesia, it can be argued that one's awareness of space can be influenced by bodily movement and consequently dance.

Notation

Expanding on the theory, this section investigates how architectural forms can be generated physically by recording movement inspired by dance notation. Drawing is often the first step taken by designers to transform an idea into reality, but how can this drawn representation be used to convey the phenomenological and kinesthetic experience outlined in the previous chapter, and what can be learnt from the discipline of dance that helps architects to achieve this?

In Kato-Westby and Glynn's (2018) article: *Fabricating Performance: Reciprocal Constructs of Dance Notation*, they organise forms of dance notation on a scale and into categories of 'analog' and 'digital' notation. An example of analogue notation is Rudolf von Laban's *Labanotation* (ibid, p.78) (figure 2). Labanotation is an early formal notation of movement and is now considered a more conventional dance notation for small scale projects. It consists of static symbols and diagrams as a way of recording movement and has similarities to music scores in the way it is read as a sequence or progression over time. The abstraction of the 3D into 2D can be compared to architectural orthogonal drawings in the way that these are simplified to be geometrically accurate and the most informative for construction yet does not represent the complexity of one's experience of the completed building. Likewise, the Labanotation sets out a score of steps for the dancer to follow but does not communicate an individual's style or experience. Whilst this approach can be useful as a set of instructions, they are static interpretations of movement and disregard any context. The fluidity of movement is lost within this method of representation therefore it is arguable whether this form of linear notation would be useful to architects. One could also say that it leaves little room for interpretation of the steps themselves. On the other hand, someone who is fluent in reading music scores can recreate the music in their head and similarly, someone who is fluent in reading a dance score could interpret the notation kinesthetically and with fluidity.

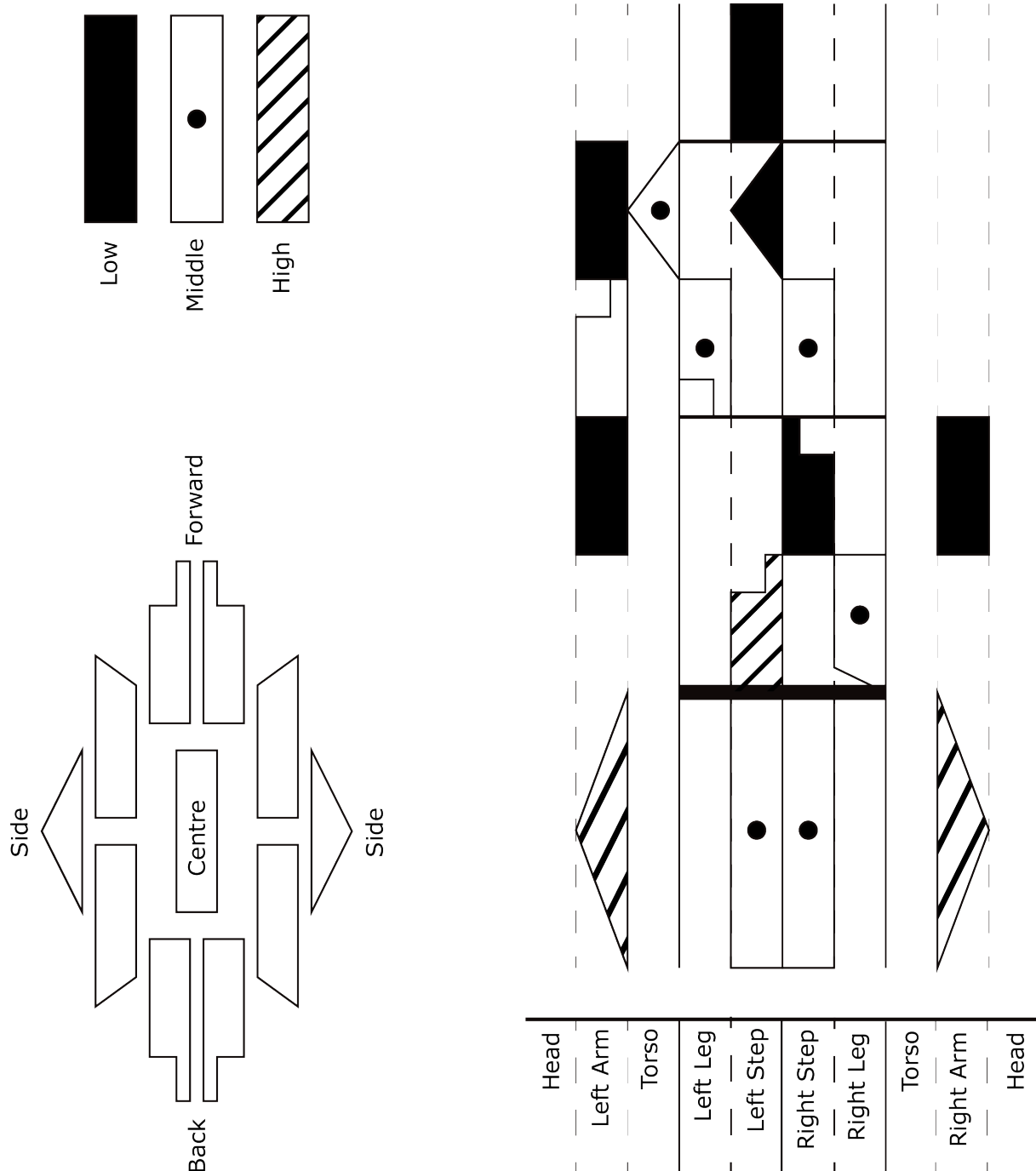


Figure 2: Example of Labanotation score, drawn by author with reference to Hutchinson-Guest (n.d).

William Forsythe uses a different approach to notation that communicates his own philosophy of dance as a temporary activity and focuses on improvisation. He often uses an architectural context to inform his choreography and suggests, ‘Choreography is about organising bodies in space,’ (Forsythe, 1996 in Spier, 2005, p. 352).

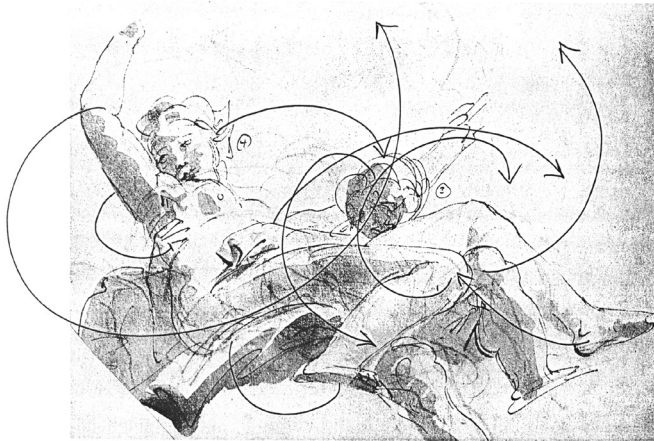
Forsythe believes that the temporality of dance is an important aspect to consider when choreographing and improvising (Spier, 2005), he has also produced forms of notation, however, these are abstract with an aim to be open to interpretation. In his letter to Daniel in figure 3 regarding the annotation to the Tiepolo drawings (c. 1696-1770), he indicates that the notation is only hypothetical and asks the dancers to interpret what is meant by each arrow (Galicheva, 2010-2013). Artists like William Forsythe could inspire architects and designers to consider this idea of temporality by encouraging an interpretive approach to drawing.

Daniel.

These are hypothetical solutions to The unravelling (demonstration?) of These configurations of human forms. The figures can be hypothetically positioned at any angle, even as if they were faced down lying on glass. One can turn The page to determine the starting point/angle, but, even upright is OK. I want you and The dancers to determine what The arrows of each page/FRAME mean; movement of Body part? The movement of gaze? The path of The part across The floor, around, and, or ~~towards~~ The other dancers limbs, or limbs to points in space! The arrows can be performed sequentially (one after another in some order) or simultaneously, or a combination of Both. Movements; sequences can be repeated and reversed. Let The bodies move on impulse and use each others support to accomplish ones goals, but also include The collapsing of structures as they fail. Include The impossible so to speak. Don't omit The awkward or The beautiful. Interpret abstractly and literally, for example winged figures might have ~~an~~ an analogous relationship to gravity → many figures even have "character role" names - no acting please but let it affect weight and speed.

Learn The Sequences in order and place them on →

Figure 3: William Forsythe's letter to Daniel (Oral site, n.d).



Figures 4 and 5: William Forsythe's annotation to Giovanni Battista Tiepolo's illustrations (Oral site, n.d).

The influence of dance notation can help to generate architectural form, an important example to consider is Bernard Tschumi's *Manhattan Transcripts* (1994, produced between 1976 and 1981). The sequences of plan, section, photographs and movement notation break up and deconstruct space, event and movement. In these drawings a qualitative approach is taken to create form by placing importance on the event, time and actions rather than the object or building. The combination of elements creates a hybrid of information and activities that suggest an idea rather than an accuracy. These drawings later informed his architectural and theoretical interventions at *Parc de la Villette* in Paris (1982-1998).

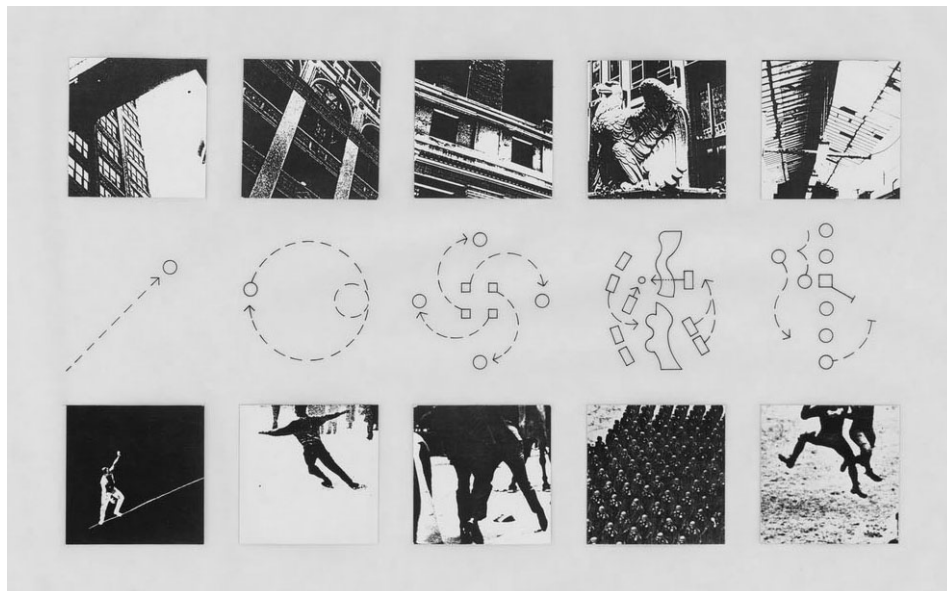


Figure 6: Bernard Tschumi's *Manhattan Transcripts*, Episode 4: The block (Tschumi, 1980-81).

As indicated previously, bodily movement defines architecture, this implies that the combination of temporality and permanence holds importance in architectural understanding. As soon as movement is recorded it loses its temporary nature and becomes permanent, even in dance notation a spatial experience cannot be represented without being abstracted, therefore an element is always lost in the representation of time and movement (Blundell-Jones and Meagher, 2015). What can be learnt is the way forms can be generated through movement studies like in Bernard Tschumi's *Manhattan Transcripts* investigation.

Case study 1: BANDALOO site-specific dance

This first case study investigates how dancers might interpret a specific architectural context by analysing a site-specific dance performed by Aerial Dance group, BANDALOO.



Figure 7: Sundial Bridge, Redding, CA designed by Santiago Calatrava (RJM, n.d).

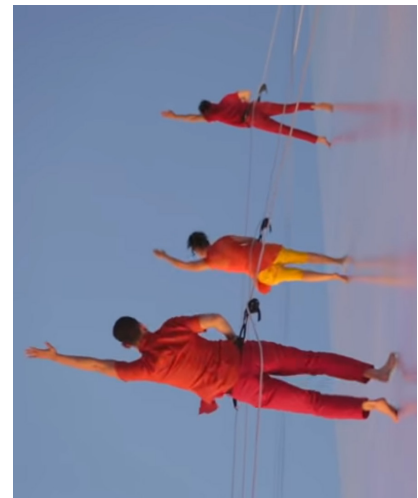


Figure 8: BANDALOO dancers at the Sundial Bridge (BANDALOO, 2015).

California based dance company BANDALOO alters perceptions of dance and architecture by turning the dance floor on its side (Arellano, 2018) (see figures 8-10). The founder, Amelia Rudolf, aimed to, ‘create experiences that celebrate the majesty and vulnerability of natural spaces, showing their beauty, strength and possibility,’ (BANDALOO, 2020) by using climbing equipment to create alternative ways of traversing the world. Many of these dances have been performed within the built environment on the facades of buildings, historic monuments and interiors. In 2014 an aerial dance was performed on Santiago Calatrava’s *Sundial Bridge* in Redding, California, a video of the performance can be seen here (BANDALOO, 2015). It explores an unusual connection between the body and architecture. Unlike an interior, the Sundial Bridge was not designed for direct bodily interaction, instead the

dancers are in contact with a part of the building that is normally inaccessible to the average user and passer-by of the bridge.

The majority of BANDALOOOP performances are site-specific meaning that the choreography responds to and engages with a particular site where aspects of the performance location are considered such as physical qualities, acoustics, historical assets, use and personal association (Wilkie, 2002). In Fiona Wilkie's (2002) survey of site-specific dance practices in the UK, she concludes that the occupation of performers and spectators in public spaces created a new meaning to the place and found that the location's 'natural rhythms', (ibid, p. 156) such as lighting, acoustics and history created a new understanding of the performances.

Site-specific performance encourages the audience to engage with both the performance and its surroundings because the dance is being challenged by its location and this leads to the disruption and transformation of the site itself (Hunter, 2015). The introduction of aerial dance to the Sundial Bridge changes the identity and normal pattern of events (Alexander, 1979) that occur in that place, this is because the performance is out of the ordinary, disrupting our perceptions of the site by both celebrating and contradicting the function and form of the bridge. The solidity and permanence of Architecture causes it to be perceived as a background to everyday life, according to Hunter:

'This temporary act of transformation [dance] challenges perceptions of familiar places by moving them 'forwards' into direct consciousness as sites of play, engagement and interaction'

(Hunter, 2015, p. 1)

In the BANDALOOOP performance, dancers engage with the site and bring the architecture into the spectator's consciousness when interactions are formed between the bodies and site and the building becomes part of the performance. This increase in awareness during site-specific performances happen because the spectator

experiences, ‘a greater sense of participation,’ (Hunter, 2015, p. 35) making them more aware of themselves within the space. McAuley (2004, cited in Hunter, 2015, p.35) suggests that this awareness is greater during site-specific events as opposed to the viewing of dance in traditional proscenium arch theatres since people form their own schema based on rules and previous expectations of theatre performances.



Figure 9: Single BANDALOOP dancer at the Sundial Bridge (BANDALOOP, 2015).

This site has the potential to make the dancer and the spectator more aware of the unnaturally large scale of this object in comparison to the human body. The difference in size is almost incomprehensible as these larger structures are often pictured in our minds from a distance or as an image.

‘The contemporary city is the city of the eye, one of distance and exteriority.’

(Pallasmaa, 2012, p. 37)

This quote by Pallasmaa resonates with Santiago Calatrava’s Sundial Bridge as its form was partially designed to be viewed from afar as a monument or tourist

attraction in the city. By using this site as a location for human intervention, a new perception emerges, and a sense of nearness is achieved, but at the same time it contradicts the architecture and highlights the scale. One could argue that the intervention of the bodies lessens the dynamic appearance of the bridge by transforming the visually lightweight pylon into a vast monolithic plane that becomes a platform for the dancers. Perhaps the act of putting an unintended event in a designed space gives the viewer a sense of unease and therefore raises questions about the experience and heightens spatial awareness. This interaction between body and architecture could be explained with Bernard Tschumi's (1996) idea of 'violence' as the dancers seem to interrupt but also complement the purity of the architectural form.



Figure 10: BANDALOOOP dancers at the Sundial Bridge (BANDALOOOP, 2015).

‘Understanding architectural scale implies the unconscious measuring of an object or building with one’s body,’

(Pallasmaa, 2006, p36.)

Victoria Hunter (2015) suggests that this awareness of scale can be linked to the sense of motion and kinesthesia. This could suggest that there is a strong kinesthetic experience for the performers and likewise, kinesthetic empathy experienced by the spectators (Reynolds, 2008- 2011).

By changing the angle of the ground plane, gravity has a different impact on the body. Although we are always experiencing this force, Damkjaer (2015, p. 122) argues that 'it becomes much more evident and palpable when experienced whilst in a string of rope suspended several metres up in the air,' this can be explained by suggesting that more awareness of the body is required to make sense of the unusual position. From an observer's point of view questions are raised when the dancers appear to defy gravity, when they jump, they seem to float and land softly on the wall and may experience an imagined kinesthetic response.

This study of BANDALOOP's performance at Calatrava's Sundial Bridge shows that a site-specific dance intervention has the potential to alter the meaning of a place from both the performer and spectators' point of view. It can therefore be argued that new perceptions of places in architecture can be formed via unusual methods of movement such as dance that make us question the body and space. It also shows that the scale of a space becomes a strong factor in the phenomenological understanding of a place and may also be beneficial for the spectators in creating an alternative interpretation of the site.

Case study 2: Siobhan Davies Dance Studios

Having addressed how dancers might experience and respond to a designed and built form, this next section will discuss and analyse the architecture of Siobhan Davies Dance Studios. Its aim is to explore the application of theories to design practice to find out what influence dance has had on the design of the building.



Figure 11: Siobhan Davies Dance Studios North-East elevation (Cook, n.d).



Figure 12: Dance studio interior (Bryant, n.d).

Contemporary dance choreographer, Siobhan Davies, commissioned Sarah Wigglesworth Architects to design a new dance studio within an existing Victorian school annex in London. The project was completed in 2005 and won the RIBA National Award in 2006, the article *Building: Looking good on the dancefloor* notes the reason for the success of this project was due to the strong collaboration between the two creatives who both had an interest in the movement of bodies in space (Lyall, 2006). The relationship between the disciplines is something that Sarah

Wigglesworth (2006) wanted to investigate as part of the design, and likewise, the collaboration proved to be inspirational for Siobhan Davies' choreography. Siobhan teaches and choreographs her own contemporary dance that focuses on the visual art of movement itself and the feeling it provokes. Siobhan Davies (2006) states, 'we [dancers] think and exist in the physical world,' implying that she believes there is a strong connection between the body and the material space it inhabits. The design of the new dance studios, 'proved to be a catalyst for change,' (Roy, date unknown) in Siobhan's own way of working as it has directed her to think more about the embodiment of architecture and furthermore, inspired her to produce pieces that are site-specific and combine with other artistic disciplines, for example, the project ROTOR (2010) (figures 13 - 14) combines the work of different artists, dance and architecture. In an interview, Siobhan Davies (Article19, 2011) talks about the way the project creates, 'connections and disconnections,' between the art forms. She is intrigued by how the audience, in experiencing these creative approaches, can become part of the work themselves. This backs up Victoria Hunter's (2015) claim that the combination of dance and architecture in a site-specific performance can engage a spectator in both the dance and the site, this is important because it helps the audience member, or user of the building become more at one with the space.



Figure 13: Artist Clare Twomey producing works for Siobhan Davies' collaborative ROTOR exhibition (White, n.d).



Figure 14: Dancers performing for ROTOR exhibition (Naderi, 2010).

To create a dialogue with the dancers, the architects generated a multisensory experience by considering both the small scale touch-points and atmospheric qualities as one. The timber panels lining the walls and undulating ceiling in the main studio combined with even natural lighting, gives the dancers a sense of comfort and freedom to explore creative approaches to dance. This main dance studio pictured in figure 12 is situated on the top floor to make use of the whole footprint of the building and to provide an opportunity for lighting by removing the existing pitched roof and installing a repeating wave-like form. From the street level, the new roof peaks above the gable ends of the Victorian façade to hint at the new use of the building. This room, unlike other areas of the building are tactically smooth which is enhanced by the way the natural light bounces off the polished timber surfaces. The curved roof suggests a breathing quality despite being rigid, however, the roofline could be considered unnecessary or a way of mimicking the dynamic movement of the dancers rather than complementing it.

The essence of the studio's previous use as a Victorian school building is still reminiscent within the conversion. Figure 15 shows the remnants of the old staircase that was removed to create an open atrium/reception area, this hints at the permanence of building in comparison to the temporary nature of dance (Siobhan Davies Dance, 2019), yet also reflects how time brings about changes to these structures by human intervention.

The extension on the South-West side of the building is situated entirely within a school playground and contains the dance studio's staircase. By placing the staircase on the outside of the building, not only does it free up the internal



Figure 15: Entrance and reception area (Bryant, n.d).

space for the dance studio but acts as a way of scaling the building with the body (Wigglesworth, 2006). In her pre-performance talk for *In Plain Clothes*, Sarah Wigglesworth (2006) speaks about the body measuring the building and how this is translated to materials, for example, each brick is the correct size to be laid by human hands, therefore the texture of brick was left exposed to give the building a human scale, the opposite could be said for Santiago Calatrava's Sundial Bridge because of its monolithic appearance. Openings in the extension's elevation of varying opacities provide glimpses of the interior, this composition creates a broken rhythm and forces the eye to dance around the surface and make connections between the vertical elements of the staircase.

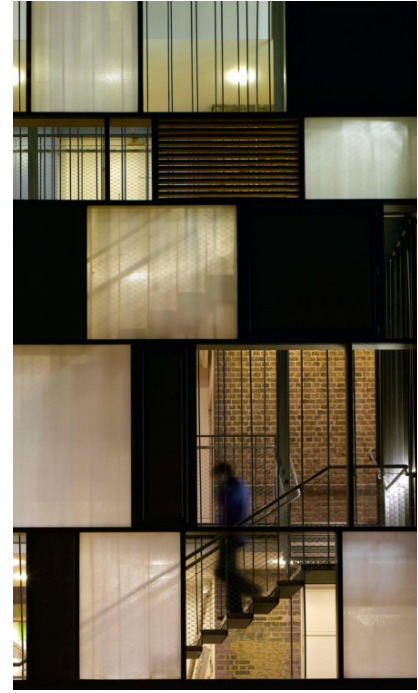


Figure 16: Facade and staircase on South-West extension (Bryant, n.d).

The expanse and height of the main studio, as well as the sensation of moving across the sprung floor, smells, temperature and lighting all contribute to the overall experience. One of the conclusions drawn from the BANDALOO study was how scale can produce a phenomenological response similar to the senses, Sarah Wigglesworth Architects used scale to enhance the dynamics of the building, for example, the high ceilings and the double height atrium produces a sense of verticality that can be expressed through jumps in dance.

As a result of this study, themes can be drawn between the architecture of Siobhan Davies Dance Studios and the BANDALOO dance, for example the role gravity plays in grounding the body and architecture, scale, materials, temporality, and engagement between site and body. Unlike the BANDALOO dance which produced an out of place feeling due to these themes, this design utilises them to create a closer connection between the body and building to produce a more intimate environment that feels natural for dancers.

Conclusion

The purpose of this study was to explore how dance can heighten phenomenological experiences and perceptions in architecture. It set out to place dance and architecture in the same context and in doing so it shows that movement plays a defining part in the meaning of architecture as it argues that the connection between space, body and mind are one. After studying the theories and applying these to case studies, we can now say that dance produces a strong awareness of the body in space resulting in phenomenological responses and feelings that are enhanced when the movement is abnormal. On reflection of the case studies, a common theme is the sensorial awareness that comes with dancing and creating spaces for dancers, drawing from this and Neil Leach's (2005, p80) suggestion that phenomenology, 'calls for a heightened receptivity of all the senses,' one could argue that dance has the potential to improve our phenomenological awareness of a place by temporarily increasing our sensory responses to the surroundings. Therefore, engaging with dance and using alternative methods of movement notation can be beneficial for architectural designers because it heightens experiential understanding of a place which can lead to better informed design decisions that are more suited to user and event.

We have also seen that not only can architecture be defined by bodily movement, but how dance can be affected by the built environment. Qualities including, but not limited to, materials, texture, scale, light, topography and orientation can all play a role in site-specific work as we have seen in the BANDALOOP case study. These things were also taken into consideration by Sarah Wigglesworth when designing the Siobhan Davies Dance Studios as well as factors such as gravity, scale and kinesthesia that all contribute to spatial awareness. The research into this case study illustrates that movement of the body in dance was a main design consideration, however, it did not use the action of dancing as a generative tool for design, this raises the question of how practicing dance can be applied to design projects. Future research is needed to find out how this can be applied in an educational or practice setting in order to use dance as a tool within the design process.

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