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**Constellations, Pathways Through the Body : An Exploration Creating new Movement Pathways Using Dual Patterning**

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CONSTELLATIONS: PATHWAYS THROUGH THE BODY
An exploration creating new movement pathways using dual patterning

Honours Exegesis

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The Use of Thesis statement is not included in this version of the thesis.
Abstract

This research paper is an exploration of the creation of movement using dual patterning, which is the tracing of two patterns simultaneously as a dual task. This piece of writing discusses practitioners Twyla Tharp, Trisha Brown and Lisa Kraus in their experiments with altering bodily habit. It also discusses patterns, imagery, bodily knowledge, and coordination to help facilitate the experiment. Thoughts and findings from the studio are discussed from the process to gain understanding of the experiment. Utilizing bodily intelligence or bodily knowledge, the body initially experiences a separation of hemispheres or halves of the body to enable the process of development of movement material using constellations of the stars as a blueprint for movement to be mapped out and created. Randomly selected body parts, being either muscles, tendons, or bones are used to lead the body through the constellation space creating sequences, for each half of the body to encounter and embody through repeated practice to form new movement as a whole.
I certify that this thesis does not, to the best of my knowledge and belief:

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I acknowledge assistance given in my thesis from supervisor Maggi Phillips and help given from Leeke Griffin who filmed some of my process.

23/3/10
## Contents

1.0 Introduction 4

2.0 Background 4

2.1 Practitioners 4
2.2 Patterning in relation to the body in dance 6
2.3 Coordination between parts of the body and Dual task 8
2.4 Movement and change with the help of imagery 11

3.0 Blueprint 14

3.1 Diagrams: Northern and Southern circumpolar skies 14
3.2 Body parts paired with stars 16
3.2 Formula for dual patterning 17
   Dual patterning grid 18

4.0 Thoughts and discoveries from the studio 20

4.1 Hemispheres of the body 20
   Images 20
   Dual task 21
   Everything is round 22

4.2. Mind over matter 23
   Connection with body and mind: The effect of mind wandering and keeping the attention in the movement 23
   Bodily knowledge and habit 27

5.0 Bibliography 33
1.0 Introduction
This research exploration is a challenge to find a way to create new movement for my body, and construct it in a way that is unpredictable in dialogue between the upper and lower halves of the body. Using constellation patterns of the stars as a blueprint for movement, the body traces or maps out two distinct patterns, creating separate phrases for the northern hemisphere and southern hemisphere, performing them simultaneously as a dual task. In the process, the daily practice of movement material is captured on video in order to assist self-reflection on the progress of the acquisition and execution of simultaneous actions. Edited versions of this process should enable external evaluators to gain a sense of the journey of learning and extending bodily knowledge through the challenge of coordination. Investigating patterning in the body, bodily knowledge, habitual movement, and coordination’s (dual patterning) will set the scene for this physical experiment. Exploring the work of theorists of body and writing, I aim through studio practice to demonstrate the significance of this coordination investigation.

2.0 Background

2.1 Practitioners
Twyla Tharp, Trisha Brown and Lisa Kraus have all experimented with altering bodily habit. Each of these dance figures investigated the body’s innate response to coordinate itself by placing dancers under new stimuli guided by rules, thus forcing the dancers out of their comfort zone and familiar ‘mental organisation’. Physical constraints, such as changes of location and overlapping of phrases, changes in speeds of movements, were used to open up the dancers’ movement vocabulary.

Tharp experimented with overlapping sequences of movements of the upper and lower body to challenge her dancers’ coordination. One phrase would be slightly shorter than the other and each phrase progressed simultaneously. Each time the phrases were repeated, new movements from the upper body were connected with different movements of the lower:

Movement itself had built-in contrasts. Rudner remembered a section in
which the legs and arms were choreographed separately, at different speeds, and then performed together, in what they called the “slip phrase”. (Siegel 2006, p. 20)

Through giving herself and her dancers exercises such as these, their mental and physical abilities to master and recall movement coordination increased. Siegel (2006) notes that:

Dickenson remembers rushing into Cunningham’s advanced class with Laudenslager (Carol), late one afternoon after Tharp’s rehearsal. Cunningham was teaching an exercise, and both of them did it immediately, twice as fast. Another time, after being invited to a rehearsal, dancers from the Cunningham company marvelled at the speed of Tharp’s dancers. ‘They said that we were working at a level that they didn’t think they could do,’ says Dickenson.

In Fugue, 1971, Tharp created the dance to move clockwise, counter-clockwise, forwards and back, with ‘double time beats on the twelfth count’ and four right angles etching a cross in the floor pattern: ‘moving through space vertically and horizontally, forward and back on lines and circles, with the possibility of different tempi and meters [was] built into the theme.’ (Tharp 1992, p.133)

Tharp also explored ‘the initial phrase—reversing it, inverting it, re-sequencing, and exploring the various attacks and co-ordinations. We ironed out the phrase by taking all the angles out of the pattern and created stylistic variations that governed the execution of the theme.’ (Tharp 1992, p.134)

In Brown’s ‘Accumulations with talking plus Watermotor’ (1980), she performs two dances simultaneously whilst talking about her experience moment by moment. Brown verbalises what she sees and feels, while her past thoughts are brought to mind through kinetic muscle memory. Louppe observes that Accumulations could be seen to be made up of apparently disconnected movements and gestures. They work, however, through a network of profound
connections linking the upper and lower and its different sides and anticipating the Brownian body, as one that exists in continuous movement. (Louppe, 1996, p.8)

Brown shares her experience of *Accumulation with talking plus Watermotor* in *Dance and Art in Dialogue*:

Accumulation with talking plus Watermotor (1980) is the performance of two dances and telling of two stories at once. I shift back and forth between these four elements according to impulse in performance. Accumulation is stationary and consists of the methodical build-up of carefully chosen gestures. (Teicher & Brown 2002, p.85)

Each gesture of one phrase is repeated then a second gesture phrase is added. Gradually the watermotor is intercepted. A secondary story is added after ten minutes. ‘My mind spreads out to encompass all four elements, the dance whirls, details and nuance compound’. (Teicher & Brown, 2002, p.85)

To make sense of the recall of memory in Brown’s ‘Accumulations’ it is necessary to bring to light Todd’s belief that there is a connection between muscles and emotions: ‘For every thought supported by feeling, there is muscle change. Primary muscle patterns being the biological heritage of man, man’s whole body records his emotional thinking’. (Todd 1937, p.1)

### 2.2 Patterning in relation to the body in dance

Bainbridge-Cohen notes that ‘There is something about nature that forms patterns. We, as part of nature, also form patterns’. (Bainbridge-Cohen, 1993 p.1) Blom & Chaplin consider that we use ‘natural patterns, complex mathematical, musical, and movement ones, we find it satisfying in making and seeing patterns’. (Blom & Chaplin 1988, p.21)

A pattern can be ‘a form and style in an artistic work or body of artistic works, or a consistent, characteristic form, style, or method’. (Farlex, 2000) A dancer’s patterns can entail sequences of movement that result in a pattern; for example; a movement
repeated to the front, side and back, forming an X pattern. There are also spatial patterns, wherein individuals are located in their own positions, and together they form a pattern that could be symmetrical or asymmetrical. Sequential patterns involve a movement that initiates at one point in the body and undulates through to the other side involving the whole body. Habitual patterns are actions or movements that have unconsciously become routine through reiteration.

In a musical score, the piece has a structure in which a pattern may reside; the music is played from a verse, to chorus, to verse, to chorus and so on. Blom and Chaplin state this as a ‘structure from which an overall form is created’. (Blom & Chaplin 1988, p. 21) This can be aligned with dance in the way that movements or spatial patterns unfold and are often repeated. It may also occur in a class context where the movement sequence is repeated on both sides of the body or in different directions allowing for a pattern to be present. Indeed, when learning a sequence of movement the individual looks for patterns to enable efficiency in recalling the movements in their appropriate order.

Moreover, bodily movement like that involved in my experiment where patterns of the lower and upper body move collectively, enable further development. Bainbridge-Cohen (1993) observes that if an individual experiences more developmental patterns through life, further pathways of expression become available: ‘if the body is the instrument through which the mind is expressed, then one can just play more kinds of melodies, or different kinds of verse, timbre’. (Bainbridge-Cohen 1993, p.100)

Therefore, it could be suggested that the more avenues and information explored, the more knowledge and awareness the body has for choice to guide movement in new directions and patterns. My interest in patterns stems from the idea that patterns occur in every event and learning experience and thus patterns impact on what and how we behave as human beings in movement and thought. It is interesting to note that as children we absorb information/knowledge and coordination patterns at an incredible rate. People often call children ‘sponges’ during this period of their lives as everything they learn shapes the person they become. You can often see a pattern occur physically and mentally in the way they have been taught and learnt new ideas.
As a dancer, patterns make it easier to retain movement sequences and, when accomplished, patterns generate a more satisfying experience: as an audience member watching others perform, I respond to form and a view of neat construction of lines and patterns. When watching the performance of ‘Harakiri a rite’ choreographed by Didier Theron, many patterns of movement and spacing occurred throughout this 55 minute work. I found it quite mesmerising and beautiful to watch the patterns of movement in unison and unexpected changes in movement and patterns that appeared. The group of six dancers travel across the space in unison and every now and then a dancer would drop out of the group either into solo or to pause. A moment of pause I remember so clearly was when dancer Matthew Morris froze looking at the audience for what felt like a long moment whilst the other dancers remained in unison. It was a beautiful moment of relief, a breath of fresh air from the constant movement, and something to draw focus on.

When watching my process of dual patterning on video, there is something beautiful about seeing the pattern of movement unfold, noticing it is there and just when I think I know the pattern and can see where it is going next, an unpredictable development occurs and the pattern changes.

This unpredictability emerges from combining and repeating the different-length phrase patterns of each hemisphere. The repetitions of upper and lower phrases create new combinations of movement until the overall structure begins to repeat itself. This is achieved by matching up each point of movement between the hemispheres and performing them simultaneously as a dual pattern task.

2.3 Coordination between parts of the body

This dual patterning needs coordination of the body and concentration in order to be accomplished. Coordination in movement is the body’s harmonious operation of muscle groups in an efficiency of movement.

Our early developmental movement patterns are established as infants, when we coordinate crawling and later walking. When we repeatedly experience and learn new movements, our bodies store these new patterns in our muscle memory.
patterns ‘do not replace the old, they are simply added to them’. (Todd 1937, p. 42)

‘Movements arrange themselves simultaneously in patterns of movement in response to impulses set up in the nervous system’. (Todd 1937, p.32) Our body thinks, however, our body and mind are not separate but work together to recall information.

According to Franklin, there are four basic locomotor movement patterns that contribute to the growth of the human body, patterns which are added to during development in life. These are spinal, homologous, homolateral, and contralateral. Homolateral involves the ‘alternation of motion between the sides of the body’. (Franklin 1996, p.42) For example the left arm and left leg move together, while the right arm and right leg move together. The term Contralateral refers to actions where opposite sides of the body move together simultaneously; for example the left arm and right leg move, in a movement such as crawling.

During my process of dual patterning, my curiosity came from the idea of shifting between homolateral and contralateral and everything in between, essentially moving body parts in new patterns. The body’s response may feel unnatural as the body is reacting to coordination patterns it has not experienced before.

This phenomenon of simultaneously moving parts of the body from opposite sides/halves in a different way to what has previously been experienced is known as the ‘Dual task’.

For instance; an individual patting their head whilst rubbing the belly, performing these two task concurrently can be difficult as the mind is attempting to process the tasks simultaneously, therefore the task can be mixed up/reversed; the individual pats tummy and rubs head rather than the vice versa. This is referred to ‘dual task interference’. (Pashler 1993)

In the act of performing two or more activities concurrently, the body may perceive itself to feel uncomfortable and, when the mind is more or less focused on one of these tasks, the other may hinder it. Pashler (1993) states when ‘more than one task is
performed at any given moment there is less capacity for each individual task, and performance is impaired’. (Pashler 1993, p.221)

Pashler writes that interference in two tasks might be ‘dependent not on what sort of operation is to be carried out but on the content of the information actually being processed: what sensory inputs are present, what responses are being produced, what thoughts the person is having’. (Pashler 1993, p.221) Furthermore, ‘if two concurrent tasks would unacceptably disrupt each other through cross talk if performed concurrently, the tasks might be executed sequentially as a matter of strategy’. (Pashler 1993, p.221)

He comments that in theory when two simultaneous tasks involve related ‘inputs’ it may be less complicated to carry out the tasks, meaning that ‘the same set of processing machinery could be "turned on" and used for both’. (Pashler 1993, p.221)

My dual task strategy in dance involves placing the body under complex tasks with rules that are meticulously practiced over a period of time until these movements are performed together with the accuracy and articulation required. The movements if assisted with imagery may produce cohesion and accuracy. An individual would need to have an understanding of how the body parts can move together in coordination, the relationship in space between the parts and their influence on the torso, and a consideration of the accuracy and speed of the movements individually to contribute as a whole.

Todd comments that in movement and coordination, ‘accuracy and speed are determined by the proprioceptive system. Stimuli from the environment and stimuli from the thinking are correlated and relayed as motion in the body’. (Todd 1937, p.247)

Todd notes:

Proprioceptive sensations or “perceiving of self”, act in conjunction with all the outer senses, serve to guide our total reaction to the outside world in terms of motion toward or away from particular objects, and to give us our ideas of
space and time. More than any other factor the proprioceptive system is responsible for the appearance of the individual as an organised unit when he is moving about. (Todd 1937, p.27)

There are three general types of proprioceptive sensations: Kinesthesia ‘The feeling of movement and weight, in all skeletal and muscular structures’; labyrinthine ‘the feeling of position in space, derived from organs in the inner ear’; and visceral ‘miscellaneous impressions from various internal organs, as of digestion and excretion’. (Todd 1937, p.27)

Bringing the mind’s attention to kinesthesia, enables body parts to stabilise together giving the total body a sense of coordination and cohesion. Through our ‘developed kinesthesia we are able, by nicety of adjustments of muscles and the recognition of slight movements in coordination, to estimate the power, distance and span of movements required’. (Todd 1937, p.32)

In coordinating parts of the body simultaneously, not only does our bodily knowledge and conscious attention allow for movement to be performed, but imagery could also be used in order to assist the body in change/development and the learning and understanding of movement choices.

2.4 Movement and change with the help of imagery

According to Franklin (1996) every individual is unique and therefore when experiences such as change or improvement are encountered, each individual reacts and learns differently. With the use of imagery, an individual can harness their learning and movement more resourcefully:

Some dancers learn consistently, others in spurts and starts, and still others seem to be making no progress until virtually overnight their ability moves to a higher level. At times, a certain pressure needs to build up before any great improvement can be made. When people do experience a breakthrough, there is a terrific new sensation of freedom and ease of motion. Often such experiences have been prepared by workings of the nervous system that are
beneath our conscious awareness. At times, you may have such an experience and there will be no trace of it the next day, although usually you will regain it with time. If you want to ensure that you will be able to recreate an experience more readily the next day, tie it to an image that symbolizes the experience. The image can be kinesthetic, visual, or tactile. The idea is to recall the experience by visualising its symbol. (Franklin 1996, p.43)

Franklin (1996) discusses how a person can recall the experience or movement more efficiently the next time it is practiced with the use of imagery. Over time, when a movement is learnt it can sometimes be unconsciously altered as it is embodied. Linking the movement to an idea or image can be useful in executing the same movement at another time, allowing the movement to stay true to its origin, initiation points, quality and sense. Imagery can be used to produce a shape or certain look, but more importantly imagery can be used to allow the body to feel the movement from the inside out. Linking the movement with an image that evokes the quality of the movement can allow it to be retained and attention to be present.

According to Franklin when using imagery, the individual needs to imagine and consider an image that illustrates the precise feeling of the movement. The movement is then practised repeatedly in conjunction with the mental image in order to retain the new movement over time. Imagery can be very personal, and relate to an immediate experience. An individual can add sensory experience to the movement, allowing the imagery to become more embedded in the body.

The image could be a product of an idea from a picture or photograph. Perhaps it is an experience, a drawing, or just words that evoke a quality. Franklin has used ‘Imagin diamonds glittering off your hip as you swing it around’ when choreographing in 1994. (Franklin 1996, p.203)

Franklin notes imagery could be inner or outer. The image could be placed inside the body, on the surface of the body, or in the intimate or larger space surrounding the body. Inner imagery is used to improve alignment and to modify movement quality. Outside the body images are used to ‘control the external environment which can assist in changing the body’s alignment and energy. As an individual can “mentally
transport” themselves, they ‘suddenly look, feel and move differently’. (Franklin 1996, p.52)

Imagery of environment can also be used through imagining a specific environment that can be related to and interacted with. How does it affect the movement? The environment could be the starting point of the exploration or an extension of the imagery already in place. Franklin writes: ‘Imagine your environment to be feeding you, nourishing your performance just as you give energy and information to the space weaving a reality beyond our body’. (Franklin 1996, p.222)

Using imagery could involve the use of sensory imagery, utilizing the bodily senses to enhance the image. Sensory imagery consists of visual imagery, kinesthetic, tactile, proprioceptive, olfactory, auditory, and gustatory imagery.

In my experiment with using constellation as a device for dual patterning, visual imagery was useful. It is the function of imagining or seeing. A pattern of the constellations could be imagined as a visual image facilitating the movement to be repeated in the same way each time it is performed. It could also assist in allowing the body to focus on the movement initiation points employing economic movement.

Kinesthetic imagery is the physical feel of the movement, imagining how the body feels within a movement. Tactile imagery is imagery through touch. The body’s proprioceptors can be used as devices to sense ‘the exact position of our limbs, in our skin, muscles, and joints’. The uses of ‘images increase the awareness of position and dynamics, “filling” the body with new sensory information and enriching the body image’. (Franklin 1996, p.47)

Olfactory imagery is sense of smell, used as stimulation. Auditory imagery could be hearing the music prior to dancing, to sense rhythm and also the tone of voice from a correction allowing the individual to store it for future reference. Gustatory imagery is the images of taste. Imagine being ‘involved in a movement as if tasting it’. (Franklin 1996, p.51)
Franklin’s concept of imagery can be aligned with Sweigard’s theory of ideokinetic facilitation to improve functional alignment. Ideokinetic facilitation suggests an individual could use imagery to ‘bring about the subcortical patterning of muscle coordination which will produce and maintain an efficient alignment of the skeletal machinery’. (Chatfield & Barr 1994, p.10) Subcortical refers to meaning; ‘involving nerve centers below the cerebral cortex’ (Farlex, 2000) Sweigard notes:

The conception of the desired movement should be perfectly clear (and accurate) and that the image used should be specific to the functional intent of the movement. Concentration on the imagined action must be maintained throughout the voluntary movement. (Chatfield & Barr 1994, p.10)

Tying movement with images can be useful not only to keep original qualities, initiation points, intent and functional alignment but in keeping the mind and eyes focused and attentive to movement and happenings in the moment.

3.0 Blueprint

Northern Circumpolar Sky Constellations
To create coordinations using dual patterning, I used constellation patterns of the stars as a stimulus and blueprint for movement. Two separate patterns were used, one for the upper body and one for the lower, both being unique from one another. The upper body has patterns of the Northern Circumpolar sky, and the lower body has the Southern Circumpolar sky (refer to diagram 1 above). These were chosen as only these stars are unique to each hemisphere, meaning no stars of the northern are seen in the southern and vice versa. Therefore each pattern in bodily movement or sequences is different. Constellations of the northern Circumpolar and Southern Circumpolar skies were used by first mapping out the constellations on a circular diagram. These constellations were arranged to take up the circle of the diagram joining each star, dot to dot to create the strong shape of the constellations. Rather than creating movement that represents the constellations, each star within the diagram represents a body part, (bone, muscle, tendon or limb). Points of the body were selected (refer to table below) and connected to the next within the boundaries of what was physically possible in each moment of the phrase. The Northern hemispheres constellations/stars were made with reading the formula anti-clockwise rotation and the Southern was completed with clockwise rotation. Two separate phrases were learnt individually and then performed simultaneously, by placing new movements of the lower body with new movements of the upper with corresponding counts.
However, as there are a different number of stars indicating a different number of movements in each hemisphere the sequence of movements overlap allowing many combinations of movements. The body’s movements and counts were matched up like a jigsaw puzzle allowing the movements to be recalled as a single stream of movement until there sequences resolve themselves simultaneously.

Body parts paired with stars

<table>
<thead>
<tr>
<th>UPPER BODY</th>
<th>LOWER BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) R Scapula</td>
<td>27) L Index finger</td>
</tr>
<tr>
<td>2) R Tricep</td>
<td>28) R Humerus</td>
</tr>
<tr>
<td>3) R Elbow</td>
<td>29) R Pectoralis Major</td>
</tr>
<tr>
<td>4) R Ulna</td>
<td>30) L Tricep</td>
</tr>
<tr>
<td>5) R Lateral Epicondile</td>
<td>31) Belly Button</td>
</tr>
<tr>
<td>6) R Phalanges</td>
<td>32) L Radius</td>
</tr>
<tr>
<td>7) L Radius</td>
<td>33) R Clavicle</td>
</tr>
<tr>
<td>8) L Shoulder</td>
<td>34) L Humorus</td>
</tr>
<tr>
<td>9) Top of Skull</td>
<td>35) L between hip and ribs</td>
</tr>
<tr>
<td>10) L Elbow</td>
<td>36) L Scapula</td>
</tr>
<tr>
<td>11) L side Ribcage</td>
<td>37) L deltoid</td>
</tr>
<tr>
<td>12) Trapezeus</td>
<td>38) R Shoulder</td>
</tr>
<tr>
<td>13) Sternum</td>
<td>39) R Little finger</td>
</tr>
<tr>
<td>14) R Ear</td>
<td>40) L Elbow</td>
</tr>
<tr>
<td>15) R little finger</td>
<td>41) L Ear</td>
</tr>
<tr>
<td>16) L whole Arm</td>
<td>42) R Ribcage</td>
</tr>
<tr>
<td>17) R Side of trunk</td>
<td>43) R Wrist</td>
</tr>
<tr>
<td>18) L wrist</td>
<td>44) L Side of Trunk</td>
</tr>
<tr>
<td>19) Skull</td>
<td>45) L Medial Epicondile</td>
</tr>
<tr>
<td>20) R Medial Epicondile</td>
<td>46) Jaw bone</td>
</tr>
<tr>
<td>21) R between hip and Ribs</td>
<td>47) L bicep</td>
</tr>
<tr>
<td>22) Spine</td>
<td>48) L Pectoralis Major</td>
</tr>
<tr>
<td>23) L Phalanges</td>
<td>49) R Deltoid</td>
</tr>
<tr>
<td>24) R Whole Arm</td>
<td>50) Rectus Abdominus</td>
</tr>
</tbody>
</table>
In the Dual patterning grid shown below, there are 52 stars in my northern hemisphere and 22 stars in the southern hemisphere that make up the constellations in the northern and southern circumpolar skies. A movement represents each star and moves in the direction to the next star, therefore 52 movements make up the upper body and 22 movements the lower body. I calculated that in order for the hemispheres to resolve simultaneously I would need to do 26 rotations (repeats) of the southern hemisphere to meet with 11 rotations of the northern hemisphere. I restricted this to an aim of 7 southern hemisphere rotations and 3 northern rotations. Due to time-limits it was not possible to complete it competently. 3 rotations of the northern hemisphere was the closest resolve.

Once all these rotations were embodied, the movement can be further manipulated with shifts in axis. This also has a formula in the table below. The first number of the northern hemisphere matched up with the number 1 in the southern hemisphere is written as shown in the grid. There is a pattern: the second digit of the double numeral has a number with the next or previous. As it can be seen there are numbers that don’t fit the pattern. 23, 29, 27 and 25. These numbers were highlighted when ever they came about in the grid. This process was repeated with the number below them in the southern hemisphere, but they were only highlighted after and not before the northern hemisphere’s previous highlighted numbers. This process was repeated a third time, however numbers that did not have a numeral that matched up to any of the original highlighted numbers were taken out. Every second highlighted number is used with a change in speed and the others are used with change in axis.

**Change in axis/speed:**

First number of northern hemisphere in each southern hemisphere rotation:

1, 23, 45, 15, 37, 7, 29, 51, 21, 43, 13, 35, 5, 27, 49, 19, 41, 11, 33, 3, 25, 47, 17, 39, 9, 31.
Key: N = Northern Hemisphere  
S = Southern Hemisphere  
Numbers = the movement number & star within each hemisphere  
1-26 column= number of rotations/cycles counted  
Bold numbers= my aim  
Shift in Axis and speed numbers= underlined  

<table>
<thead>
<tr>
<th>Southern Hemisphere</th>
<th>Northern Hemisphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 stars-22 movements</td>
<td>52 stars-52 movements</td>
</tr>
</tbody>
</table>

Resolution  
26 Southern hemisphere cycles = 11 Northern Hemisphere cycles

4.0 Thoughts and discoveries from the studio

4.1 Hemispheres of the body

Images  
During the process of the constellations’ mapping by different body parts, I found it useful to tie movements to spatial imagery. For instance, as the northern and southern constellations are in hemispheres, I began to visualize myself encased in a sphere, the centre of my body as the axis and the point above my hip bones as the equator that divides the body or hemispheres in half. Stars are visualized in the air surrounding me and I used the spatial trajectory to orient myself in my own environment. Visualizing the exact point of the body leading to each star was used as the initiator of the movement. Imagery assisted in not only remembering the movement but recalling it precisely.

My relationship with my kinesphere became an important part of the experience with the dual patterning, not only spatially but in terms of a sense of the circularity and wholeness to movements that could be developed. The notion that everything is round, not angular or linear has become very clear to me. The human body has
curves, movements are not one way or up and down or sideways. I can take my movements to the edge of the sphere, so that they are fuller and more whole/complete.

My experiment using the sphere has a similarity to Dutch choreographer Anouk Van Dijk’s Cube, where the body is encased in an imaginary cube. When one part of the body moves there is an imaginary direct line through to the opposite side of the body which extends further in length for stability. Van Dijk uses horizontal, sagittal and diagonal planes between the two points to achieve this, visualizing the exact plane on which the movement would occur. The understanding behind this is that the body can reach further than you think it can, thus the movement becomes fuller, grounded, balanced and continual.

When creating the movement I had to decide whether I would be the centre of the sphere in the diagram and the stars would rotate around me, or if I would let pathway of the stars move me by following them. I chose to allow the pathway to move me. However in the northern hemisphere’s case (the upper body could not turn around without the legs shifting, so instead of tracing the constellation behind me, I was able to trace them in front of myself, and twist my torso as much as needed depending of the body part used. The lower body on the other hand travelled, turning my body around rather than there being a ‘front’, thereby making the movements more three dimensional. This decision allowed the body to rotate as a whole and move through space.

Dual Task

Early in the process I realised that, although my task was to create a dual phrase using the southern and northern hemispheres of my body separately (cutting the body in half) without interference from the opposite hemisphere, the hips are connected to the legs and they are also part of the trunk. Anouk Van Dijk has said that ‘The hips are not the legs’ (2009) Consequently, when in motion it is not possible for the southern hemisphere to move without residual movement from the northern and visa versa, unless the trunk is not involved in the movements at all, remaining stationary and stabilized by the core while the limbs move in isolation. However after a period of time after the hemispheres were separate from one another, the distinct patterns became embodied and thus the body operated as a whole entity rather than two halves
moving separately together. This was much easier to achieve when creating a new coordination within the body rather than forcing the body to separate, making movement clumsy and awkward.

Both hemispheres need assistance from the other in order to stabilize the body as a whole. This aligns with Anouk van Dijk’s theory of ‘Counter technique’. Energy is directed through the opposing limbs to allow the full movement to be articulated with length and stability, which is known as ‘counter directing’. My task in each hemisphere was to find a way that the body can be stabilized without producing an affect on the movement as a whole.

Using dual task was interesting and frustrating. I found overtime the legs could be left to move without too much thought as the pattern continued from 1-22 was quite short. However, as the upper body was much longer (52 movements), it required more thought when performing the hemispheres together. If the mind wandered too much, movements of the arms were accidentally repeated from another phrase. I had to constantly know where I was in the pattern every step of the way in order to remain consistent. Mid-way through the experiment, I found it so difficult remembering which pattern I was up to. Particularly repeating it over and over again in practice, it was easy to forget whether a movement had already been performed or not. I found visualising the pattern of the constellation pathway assisted to remember the movement and where I was at in the sequence which eventually overcame this problem.

Everything is round

It was tempting to change everything created into something else. When the hemispheres were joined together, movements felt clunky, awkward and I considered them to look very uninteresting. However, this wasn’t part of the task, I didn’t have to like the movement, I only had to create something new using two patterns. I made myself continue the experiment unchanged, as altering movement would be unprincipled. Over time, as I began to embody the movement as a whole, I was brought to a new exploration with the movement called ‘rolling’. Movements are rolled through (or marked) to allow a sense of flow and organization. This was a task
Gemma Laing

used over a period of three weeks with the material made. The first step: The individual rolls through the movements, a kind of marking with more intention, to allow movements to become rounded and smooth. The second step: the individual goes back and clarifies each movement giving its full articulation and attention. The third step: to repeat the rolling technique again concentrating on the articulation of movements leaving a residue. Although the movements are more rounded, it was important for me to balance the full articulation of the movement with a sense that one movement flows into the next, which assisted greatly with the coordination of the two halves of the body. Sensing the new movement as a whole no longer felt foreign.

4.2 Mind over matter
Connection between body and mind in motion
The effect of mind wandering and keeping the attention in the movement

Bainbridge-Cohen’s philosophy of the body and mind connection whilst in motion involves the notion that:

Our body moves as our mind moves. The qualities of any movement are a manifestation of how mind is expressing through the body at the moment. Changes in movement qualities indicate that the mind has shifted focus in the body. When we direct the mind or attention to different areas of the body and initiate movement from those areas, we change the quality of our movement. So we find that movement can be a way to observe the expression of mind through the body, and it can also be a way to affect changes in the body-mind relationship. (Bainbridge-Cohen 1993 p.1)

In the process of learning a new coordination through dual patterning, I found it interesting when I noticed my mind wander as the new movements were embodied. Performing multiple tasks at once can sometimes be such a sub-conscious action, and when there is a realization of it happening, there is a noticeable shift in the body as awareness comes back. However, when these movements lose the mind’s attention they also lose their clarity.

In Lisa Kraus’s ‘Eight’ (1969), she uses a ‘complex counting procedure’ where the
right arm moves faster than the left. Kraus experiences her mind drifting away from her body's actions but the body does not stop with the mind. The body continues the phrase it has embodied and the mind slips in and out of awareness. Kraus said in ‘Dancing mind: A journal of process’:

Midway through video-taping this section, I realized my mind had been somewhere else entirely, leaving my body’s maneuvering to autopilot. There had been no mistakes...Mind spins out of entertainment and commentary in the form of discourse thought. Watching itself the mind realizes this and returns to an awareness of breath and the present moment. The dancing movement of mind is less easily perceived, but that same process of mind wandering and then returning to fully inhabit the body and the moment happens continuously. (Kraus 1969 p. 17)

Normally practicing over time has this effect as the movements become second nature and you no longer need to think as much. However, in my experiment for the majority of the task, I was constantly thinking, trying to stay in control of where my body wanted to go. Kraus’s experiences of mind wandering may indicate that the body has begun recalling movement on its own, having already been transferred the information to muscle memory. However does the movement resemble its initial quality and intricacies? Looking back at video footage I found that movements began to lose their clarity over time. Initially movements were very similar in speed and tempo, and you could see the body parts moving towards imaginary constellations more clearly. However in later footage, when the body and mind could recall movement and the movement felt more natural it was evident that I began to move through them at a faster pace and each body part began to overlap in movement making it unclear.

One of my wishes in this process was to keep the original intention of a movement, and not allow my mind to wander. This can be aligned with improvisation where the dancer is given a certain stimuli or framework to work from (a reason for movement) and moves along their own interpretation of these guidelines throughout the improvisation. If the dancer for some reason loses attention on the score or stimuli, it is evident in their improvisation that they are not still in the moment. This can happen
when one loses interest in the score and the attention or intention behind the movements trail off. (Goldberg 1986)

However, improvisation being spontaneous is quite different from choreographed movement that has been repeated and learnt over time. Movement can become embedded in the body, where conscious thought can easily become distant, as other factors come into play, such as spatial orientation, force, time and questions over the aesthetic look of the movement. These thoughts may come into the dancer's mind affecting the original quality of the movement and the movement's initiation point. Another factor that can sometimes unconsciously occur to affect movement is when sequences of movements that have been repeated over-time become embodied to the extent that they become second nature and less and less alike the initial choreography or intent. As movements are recorded into kinesthetic memory, the sequence can become more sequential and previously learnt pathways of movement can be unconsciously altered incorporating old habitual patterns. Being present in the moment allows the movement to keep the original qualities encouraging the audience to go with the dancer on his/her journey. Its original qualities could be retained through the attention to specific body parts and initiation points where the rest of the movement follows through. Fraleigh (1994) depicts this attentive awareness:

> When I dance, I am subtly attuned to my body and my motion in a totally different way than I ordinarily am in my everyday actions.... The point is [that during everyday actions] I'm not really paying much attention to my movement. I'm just doing it. ... But, when I dance, I am acutely aware of my movement (Chatfield and Barr 1994, p.9)

As discussed earlier, the body has to re-train and re-learn how to move in a way that is different from previously learnt movement. In the early stages of my experiment of dual patterning, although on video it may look as though I am coordinated, I am actually having a very different sensory experience. I have found that especially during the initial learning process movements felt like they were not articulated. I had more trouble recalling movement than I did coordinating it. I quickly realized that I was imagining what I looked like when I’m dancing and I found that very unhelpful as I easily lost my train of thought. For example: in technique class, dancers as well as
myself often get caught up in trying to imitate the movement the teacher or choreographer is performing rather than noticing where the body is, its spatial trajectory and the feeling. Consequently details are lost, I don’t know where my body is in space, and I easily forget exercises. I discovered that by focusing more on my sensory experience, relying more on my proprioceptors, sensing the way the movement feels and remembering the constellation of which the movement is a part made recalling the movement and repeating it exactly easier.

Another tool for recall and keeping original intent of a movement that I used was keeping the attention whilst in motion. Thoughts such as; where am I initiating the movement from, how does it begin and what is my interest in this movement were used as starting points for an attentive state. Although my aim was to keep my thought processes active, it was necessary not to over think. Over thinking due to extraneous elements such as; does the movement look good, am I imagining the feeling or the visual representation of what I look like, can cause a loss of train of thought. Keeping the attention was a tool that I had to practice over time in order to maintain a sense of presence.

To be thinking in movement allows the audience to see the mental processes that go on in the dancer’s performance. I find it interesting to consider that traditional dance practices often conceal what is going on inside the dancer’s mind; there is a lot more actually happening behind this front that could be allowed to be seen by the audience. It interests me to explore whether a dancer’s presence of thought needs to be hidden. In my practice of dual patterning flickers of thoughts can be read on my face. I’m so use to concealing it, making it look easy and like I know every movement off by heart, that it was very difficult to get out of that pattern and allow it to remain exposed. I quite enjoyed watching my video footage where my expressions make the movements look more unpredictable, like I’m not quite sure where I’m going next or like the body does not want to go to the next movement as it is difficult. I think it adds more depth to a performer. The audience is able to see the person there and the mental organization of the task at hand, not just a body moving through space.

When I was ready to begin to practice performing in front of an audience I video taped it to see if it would change my quality of movement or presence. I found that
my movements became more than they actually were and they were significantly faster. I had just put all this time into changing axis of 12 movements and changing the speed of 13 movements and all of it was lost as I “performed”. I feel that practicing in front of an audience is a very important part of the final stages of a process. It allows the performer to develop a sense of relationship with what they are doing and the audience without losing normal speed and articulation.

Bodily knowledge and habit

Overriding the body’s natural impulse in dual patterning by guiding with rules has proven to be a long, mentally and physically challenging process. I found adding rather than changing patterns to be an easier and more logical pathway of thinking, as patterns of movement that are learnt over time through life can be difficult avenues to change. I feel dual patterning can be negotiated by bodily knowledge. Bodily knowledge means knowing in and through the body. Parviainen refers to bodily knowledge as a way to ‘describe the living body's movement ability, which is not doing itself; however, this learning evolves on the basis of bodily awareness, kinesthesis, and perception’. (Parviainen 2002, p.19)

Bodily knowledge is developed over time throughout an individual’s learning and life. It is the awareness and sense of the body’s actions which is a result of our interaction and ‘bodily negotiations’ (Parviainen 2002) with the environment that allows further information to be attained. Sheets- Johnstone notes that:

We learn by moving and by listening to our own movement. We can feel, for example, the swiftness or slowness of our movement or its tensional tightness or looseness that evolves on the basis of the bodily awareness. (In Parviainen 2002, p.20)

I video-taped the process of my physical experience of using the constellation patterns and it was evident in the footage captured that overtime the movements became more and more embodied and were being subconsciously altered. I took the use of the footage to analyse the movement changes. In one earlier clip, you can see my body and mind’s thinking processes because the movements were not quite absorbed in my body. The movement felt awkward and uncomfortable as my whole body was not
used to moving the upper and lower body in such complex and opposing directions. However, dancers are very skilled at covering up physical difficulty, although the movement felt unnatural, this did not translate that much onto video, although, in the later stages the difference with practicing over time is evident. Movements were performed more smoothly and there is a distinct difference in presence and control.

Bodily knowledge and muscular memory/kinesthetic memory are very separate, though they work together when a dancer is moving. When the same movements are repeated over and over, the movement is recorded into muscle memory, and in time the movement or pathway of movement may form a bodily habit, in which the way of moving unconsciously reoccurs as it is a comfortable familiarity for the body.

This suggests that when movements become habitual, it takes bodily knowledge and attentiveness to change the patterns of movement. Sometimes when altering or attempting new movement patterns, a dancer may experience the movement as uncomfortable or awkward. This is not necessarily a bad thing since it could mean that the movement is not understood or is different from what is habitual for that individual. Franklin (1996) notes:

> When you change something you go through a state of sensory “confusion” or disorientation. This may signify that there is some “rewiring” going on in your nervous system. Many of the familiar feelings related to how you move are becoming outdated, even though they still feel more comfortable and the new way of moving feels strange. (Franklin 1996, p.43)

Habitual movement patterns can sometimes become limitations. Hagendoorn (2003) also refers to habits as being unconscious; ‘Habits are unconscious and can therefore get in the way of desired movements.’ (Hagendoorn 2003, p.222) He notes that an action can develop with no prior requirement of working out each step. Habits may also result and be comprised of a personal style. ‘Personal style of movement is formed by genetic background, developmental patterns, and habits acquired continuously throughout life.’ (Franklin 1996, p.43)
Overtime, my body found ways to absorb the movements almost as if it was trying to find something familiar in its bodily knowledge so that the new movement can be executed more easily and naturally. It finds a similar movement that the body recognises, even if it means that movement has a different initiation point. It is like an imitation with variation of the original movement. Sometimes when learning a new movement an individual may go back to old habitual patterns.

Parviainen discusses the process of bodily knowledge when applied to a pianist rehearsing a new piece:

As a pianist practices a new piece, he moves from fumbling incompetence, from being "all fingers and thumbs," toward a fluency that not only permits, but also demands that the fingers be left to themselves. Reading a piece of music, the pianist is not in general thinking about his fingers on the keys—that becomes necessary only when a piece requires unusual dexterity that stretches existing technique. A piece within one's compass will take shape under the control of our vision of the meaning of the music as conveyed to us by indwelling and tacit integration (Puddefoot 1996). If a musician shifts this attention from the piece he is playing to the observation of what he is doing with his fingers while playing it, he becomes confused and may have to stop (Sveiby 1997). ....Bodily knowledge does not involve a mere technique or production of a skill; together with the body’s reflectivity it offers possibilities to choose ways to move. (Parviainen 1998, p.19)

There is a similarity to the pianist’s experience of playing a new piece inarticulately to in due course playing it skilfully to my coordination of the technique of dual patterning. In dance an individual practicing/learning a movement will use their ability to find the information in the body through ‘bodily negotiation’ to execute the movement, adjusting the force and quality through their body’s sensitivity. There is a moment that arises where the individual adapts the movement if required and moves accordingly. (Parviainen 1998)

According to Blom and Chaplin (1988) ‘awareness grows through repetition and experience’ (Blom & Chaplin 1988, p.18) Therefore in my process of dual patterning,
my bodily knowledge of each new movement is not immediate but develops through the course and process of practice, gathering new information and knowledge of how parts of the body can move together through sensing and feeling. ‘The body knows itself through the mind and the mind knows itself through the body’. (Albright & Gere, 2003, p. 21)

During the last month of my experiment I was in my improvisation class using a score as a stimulus, when I experienced an acknowledgement or understanding of the way I was moving my body. In improvisation a dancer is always looking to discover something new, or find a different pathway to a movement, I realized I had begun moving with a new quality and articulation in my torso and arms that I normally would not have done. This quality directly relates to the movement I have been practicing in my thesis experiment, unconsciously as my body has become more familiar and comfortable with movements in this experiment they have been translated into everyday practice and have become apart of my muscle memory. I came to this revelation when I used one of my movements in my experiment.

Parviainen (1998) notes:

Dancers and choreographers acquire knowledge of movement gradually in the process of doing dance work; they cannot possess knowledge and skills of the moving body immediately, but only through constant practicing of the dance. In other words, the dancer's bodily knowledge is a path, developed and formed gradually during his or her career. A new skill learned yesterday is sedimented in the dancer's body, becoming his or her indwelling tomorrow. This sedimentation of skills, knowledge, and experiences in the body can be regarded as a path or as a personal choice. Studying a certain movement style, the body habituates to this vocabulary, eventually living through it. (Parviainen 1998 p.21)

This could suggest a reason for movements becoming habitual. Knowledge of a technique that has had a profound impact on the individual may result in the dancer
moving in a particular way, repeating movements that have become imprinted into the body.

I recognised, especially at the beginning of the process, that I have many qualities and movement pathways to which my body gravitates. Leading with the hips and ribcage, using the arms extended away from the body, or gathering momentum through force from within the body, as Olivia Millard once described as being a ‘momentum junkie’ (Millard, 2009) can be categorised as my habitual movement preferences. There are a few examples that occurred when creating the movement. It was interesting when viewing my initial video footage and looking at the way the phrases were constructed and in particular the movements that were chosen. Similar movements and qualities are seen repeated as a pattern, however with the use of different initiation points. Although I had constellation patterns as the stimulus and guidelines for the movement, I noticed I would choose movements sub-consciously just because they fitted in the direction of the constellation pattern. This is the main reason why I decided to select body-parts for each star in the constellation pattern and chose a rotation in which the patterns in the hemisphere had to be followed. For instance, the Northern hemisphere’s constellation had to be followed in an anti-clockwise direction and the Southern hemispheres in a clock-wise direction. Using patterns of constellation in my experiment cemented these rules and allowed movements to be put together in a way they might not normally be executed, giving me clearer or more defined directions which were difficult to cheat or ignore. Guiding the experiment with rules assisted my movement coordination to stay true to the intention of the task.

The trouble with using a post-modern form of choreography is that movements all tend to be the same tempo. When I would invite people to watch and give me some feedback, the feedback was always about changing the speed and quality. Although they said it was beautiful, the movements were all the same. I found it difficult to justify why I should change some movements, as I couldn’t change them to create a more interesting piece, this wasn’t my task. Normally a choreographer would use a process like this and take only parts of the phrases to create a work in the next stage of process. However, as I am not up to that stage, I used their feedback to discover my own formula to change axis and speed (see Blueprint section).
Even until the final two weeks before performing my thesis, I found I am still only remembering the movements as halves, not as phrases, with exception to the first phrase, which is entirely imprinted in my mind and not in separate halves due to it being the first phrase I made and subsequently the most practiced. However, I have found that the lower body is now moving on auto-pilot, probably as it is repeated more times and less complex in comparison to the upper body. The upper body however is still going through the motions of the rotation in my mind in every simultaneous action. The movements together are being remembered separately, the changes in direction, axis and speed act as markers for my memory that allow me to remember which rotation I am up to.

Leading up to the showing of my thesis I began working with music. This was added fundamentally as I feel it is easier for an audience to watch movement accompanied with music. Music was brought in late in the process because I didn’t want the music to dictate the movement. It is very hard to not respond to music at times and this is why it was only practiced with in the final weeks. Footage of the individual phrases were projected onto the back wall at the beginning of the piece to show the progress from the initial phrases into the dual patterning. 3 Constellations were also set up in the space using small touch lights to give audience an example of the constellations that were traced and to add an extra element to accompany the movement.

In my process I found that by exploring movement vocabulary, I began to understand my own habitual movement patterns, not trying to necessarily change them but add to them, using bodily knowledge (interconnecting sensation and actions) and imagery has helped guide beyond habitual movement and coordinations. By placing the body under complex physical tasks guided by rules, new patterns have been experienced in the body, allowing more knowledge and range of possibilities to come forth in the future.
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