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Laban's Choreosophical Models

Nicolas Salazar Sutil

The graphic approach to movement analysis

Intuition tells us movement is a continuous and indivisible flux of change. Human movement, however, being a projection of this flux, is not always meaningful when grasped intuitively. It is therefore important to differentiate between an *intuitive* and an *analytical* approach to movement representation. Whilst intuition *knows* the movement from within as a continuous whole traversing space, an analytical eye encourages us to *think* of movement and rationalise it as a series of immobile divisions. This breakdown of movement into units amounts to what is known as movement analysis, a theoretical programme that seizes the continuous flux of movement by using various graphic methods and media. Analysis in this case relies on a certain materiality of graphic inscription, as well as specific techniques and technologies for mediated visualisation.

Further analysis is therefore only possible subsequent to a research activity involving a chosen medium that is capable of recording moving images (this might be motion capture, computer animation, photography, cinema, video, live drawing, diagrammatisation, and notation amongst many others). The mediated capture of flowing movement then becomes the essential means to the theoretical study of movement, not least because it is only when the snapshot has been produced via a material and mediating process, that this meaningless flow becomes identifiable as a fixed object of analysis, as well as an object for documentation and reconstruction.

The approach in question is characterisable furthermore as a modern development, which owes its emergence to the popularisation of new visual media and motion capture technologies, which have became at once powerful new tools for artistic practice as well as methods for artistic research. As such, these media have become important devices for the construction of a modern discourse of human movement, as well as the grounding of new inventive methods based on movement visualisation, capture and analysis. Two of the best known and pioneering theoretical schools of movement analysis, both of which emerged in Europe at the turn of the century and which overlapped in the first decade of the 20th century, are the photographic movement analysis approach of Muybridge/Marey[1] and the choreographic and visual graphic approach developed by Hungarian artist-researcher Rudolf Laban.

In this article I will focus on the role modelling plays in Laban Movement Analysis (LMA), particularly in terms of facilitating a graphic method for the understanding of human movement. Laban throws a rational and mediated eye on movement, as he himself asserts: because it is 'essential to find out the natural characteristics of the single phrases which we wish to join together to make a sensible sequence' (1996: 4). In other words, this instantaneous capture or snapshot (in Laban's case primarily via drawings, diagrams, graphs and notation) is not a means in itself. As Laban puts it, 'we consider our snapshots separately only for the sake of analysing the characteristics of the whole flux' (1966:4). Drawing and kinetographic inscription then serve the purpose of analytical examination and recording of movement, in order to be able to extract from a random flux of movement a series of basic units within which to construct ordered sequences and patterns.

Laban's space-harmonic models

For their better understanding human movement patterns can be represented as *models*. Space modelling is especially suited to a graphic approach like Laban's, firstly because spatial models are often visual objects, and secondly, because they are made up of elementary units like points, lines, angles, which allow space to be broken down for its

[1] Eadweard Muybridge's pioneering work in photographic studies of motion and in motion-picture projection was extended to the study of chronophotography by Étienne-Jules Marey (both men were born in 1830 and died in 1904), which in turn have been used by Gjon Mili as techniques for mediated performing arts (Cutting 2002). The Muybridge/Marey methods of movement analysis are in many ways alike Laban's theory of movement analysis, particularly in their use of graphic media for the purpose of analysis and documentation. For a comparative study of the two approaches see Carol-Lynne Moore's *The Harmonic Structure of Movement, Music, and Dance According to Rudolf Laban: An Examination of His Unpublished Writings and Drawings* (2009).

detailed analysis. Other elements like number, tone, scale and colour also serve this purpose, thanks to which space is made communicable as a carefully constructed rational language based on units of composition. From a study of such basic units, Laban was capable of selecting a number of standard mathematical objects that helped him visualise movement in terms of space-harmonic models.

It is important to ask at this stage how some of the top-heavy concepts that might arise from mathematical modelling, which at first inspection seem more promising for a philosophical study, can be of relevance to a dancer or movement practitioner and theorist. Laban's solution was simple and elegant. The best way to model human movement in order to better understand its harmonic relations, is by the use of the five Platonic solids (the tetrahedron, the cube, the octahedron, the icosahedron and the dodecahedron). According to Laban, these are the most appropriate tools for the purpose of describing and visualising how the body moves in harmonic space.

The justification for this choice lies in that Platonic solids partition space in a regular way. As such, their corners can be used as reference points to map movement pathways, thus creating harmonic structures known as scaffoldings. The symmetry and harmonic operations realised by these five objects, when used as material models of the dance, make a kind of geometrical dance-architecture within which the dance itself becomes a meaningful language, as opposed to a random expression of continuous gestures. As Laban scholar Carol Lynne Moore explains, the resulting angles of the trace-forms drawn within these geometrical space models impose a rhythmic structure on the flowing curves of bodily motion through regularly occurring changes in direction (Moore 2009: 87). The meaning that emerges from this regularity is the reason why Laban represents trace-forms as geometrical solids.

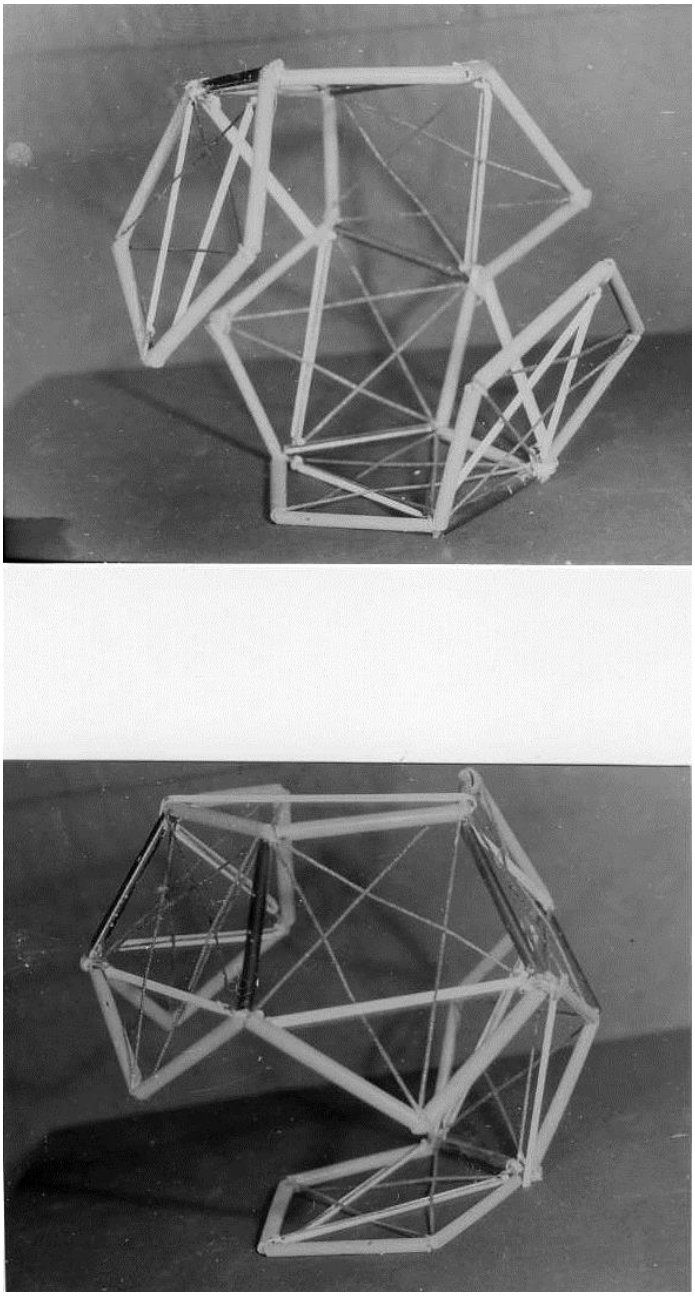

Fig 1. Laban's 3D models of harmonic relation in his icosahedral model of the scaffold, his preferred model for human movement harmony. Courtesy of Laban Archive (NRCD, University of Surrey)

Finally, it is important to note that a fundamental distinction appears between different types of models in Laban's space analysis. As I have mentioned, Laban used solid geometric shapes as analytical models (his preferred one being the icosahedral model). He also made use of other shapes that are more dynamic in character, which helped him describe internal movements of an emotional or psychological type. I am referring now to the knot, inverted circle, and lemniscate models of the dynamosphere, which I will return to

in due course. Finally, there is yet another model in Laban's theory of space harmony, which hardly features in Laban training at all, and that is the spherical model.[2]

The spherical model

In choosing to focus on the sphere, or the 'spheric form' (sic) of the scaffolding, I have purposefully chosen to discuss something I was not exposed to while undergoing Laban training many years ago, but which seems to me now almost inextricable from any Laban-based training. The question is: why has the sphere not featured more prominently as an object of analysis in Laban scholarship and training? One way of answering this question is by arguing that whilst the use of visualisations of Platonic solids and topological objects enabled Laban to construct a *practical* and didactic system for harmonic space analysis (namely choreutics), the object I have in mind serves a different purpose. My decision to focus on the sphere is key to uncovering a much larger conceptual framework in Laban's work; that is, choreosophy.

The sphere is both a physical and purely abstract dance-object for Laban. On the one hand, Laban explored real-life spherical models that enabled him to experience the dancing sphere as a material, visual and tactile space-form, as we can see from the photographic print featured below, which is part of a series of spherical studies contained in Laban's personal collection.[3] On the other hand, the spherical model provided Laban with more than a literal description of space. For a start, the spherical model is not only a conceptualisation of physical space, like the five Platonic solids. Nor is it a metaphorical model to describe inner movement, in the way Laban's topological models are. Neither of these models gives rise to any interpretational difficulties, not least because they are to be understood always in relation to real-life movement in space.

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[2] The spherical dance as choreographic notion was familiar to modern dance practitioners contemporary to Laban, who were beginning to make use of this particular movement-object in their choreographic practice. Worthy of mention in this context is the work of Grethe Wiesenthal in the early decades of the 20th century. Laban does not conceive of the sphere like Wiesenthal does, however, as a literal object. Laban did build real-life 3D models of this shape, as we have seen, but as I have also intimated throughout this paper, these materialised versions of the sphere are to be distinguished from the sphere as a fundamental form. This universal shape has no representation as a real papier-mâché version. Spherical dance in this sense remains for Laban impossibility, for the sphere in Laban's choreosophy constitutes the ideal of a double infinity.

[3] The spherical structures featured in this article are part of an undated series of black-and-white photographic prints depicting real models possibly made by Laban himself contained at the Laban Archive, National Resource Centre for Dance, at the University of Surrey (L/F/4/74-81).

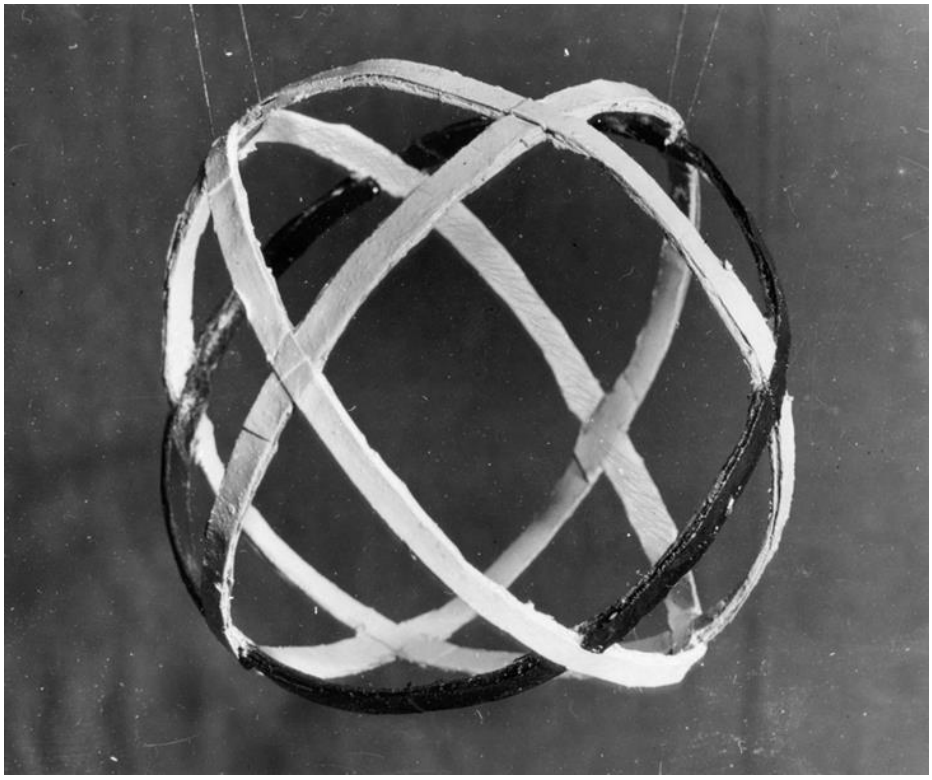

Fig 2. 3D Spherical model by Rudolf Laban. Courtesy of Laban Archive (NRCD, University of Surrey)

As well as being a material object used for dance training, the sphere is also a philosophical object. Thus, the sphere features in Laban's writings as a concept that is primarily ontological: it addresses the question: what is the dance? Or rather, what does it mean to be in the dance? The sphere becomes a model of the subject, an individual 'I' that asserts itself in space as a moving self. Furthermore, the dancer in the sphere is contained via a chain of self-similar relations within larger spheres of movement. At the same time, the dancer in the sphere contains smaller spheres within its own sphere. In sum, the dancer is part of a multidimensional universe that links micro and macroscopic movement as part of the same continuum. Now then, before I go on to address the sphere as a choreosophical model, it is necessary to take a moment in order to discuss the spherical model as practical object in dance training.

Double infinity: kinesphere and dynamosphere revisited

Laban argued that the infinity of real-life human movement is twofold. He therefore wrote of a personal sphere, a space within one's own reach, which he conceived as the

totality of movement available from any given bodily stance. In his book *Choreutics* Laban described the so-called *kinesphere* as the 'sphere around the body whose periphery can be reached by easily extended limbs from that place which is our point of support or stance' (1966: 10). Laban explains that we are able to outline the boundary of this 'imaginary sphere' with our feet as well as with our hands. This constitutes an unchanging realm of movement. Thus, Laban explained that when we move out of the limits of our original kinesphere we create a new stance, and transport the kinesphere to a new place. In Laban's words: 'we never, of course, leave our movement sphere but carry it always with us, like an aura' (1966: 60).

Fig 3. 3D model of spherical space harmony, by Rudolf Laban. Courtesy of Laban Archive (NRCD, University of Surrey).

The kinesphere and any of the five solids Laban inscribed within it as smaller representations of harmonic space can all be extended or contracted by human volition. Whilst the basic properties of the kinesphere remain fixed in terms of a 3D orientational space available for the purpose of physical motility and locomotion, the kinesphere should be thought of, as Moore points out, as fluid and malleable, insofar as it can only be established by the dancer's motion (2009: 111). Thus the kinesphere can grow and shrink in

size, depending on whether the dancer is using fully extended limbs. Likewise, it can be more disc-like than spherical in shape depending on whether the width of movement is limited. So while the potential kinesphere might be visualisable as a perfect sphere, the actual sphere is established by actual movement, or as Bergson puts it, 'by real motion that deposits space beneath itself'.[4]

Now then, although the kinesphere is a malleable object, it remains fixed throughout as the model spatialisation of a certain type of movement, which Laban called kinespheric. Kinespheric movement happens outside the body, as a representation of the body in volumetric space. This kind of movement can be given a numerical value, say in terms of bodily angles, steps, distances, and other discrete measurements. There is, however, an entirely different kind of movement, which takes place in an entirely different sphere, and which is constituted neither as outer-physical, nor as countable or measurable.

Laban argued that to understand human movement in all its complexity it is not enough to visualise it as physical bodily motion, but also in terms of inner movements, which are both mental and emotional. In addition to extending the body in space, Laban studied this inner sphere via his theory of efforts. This he called the dynamosphere. Thus, a movement is shown not only in the choice of a certain path (line) or the employment of a certain limb (body part), but is also characterised by the choice of what Laban called 'dynamic stress' (1966: 27).

Laban described dynamic stress as occurring in a way that cannot be understood in measures of extension: in other words, dynamic stresses are connected with one another by intensive relations and 'numberless transitory positions' (1966: 27). Dynamics stress is further understood in terms of nearness and farness from a given point, which is why it cannot be given a discrete numerical value. A dynamic stress might be said to 'peak' or 'decline', but not in terms of a specific degree or numerical value. Laban makes the distinction clearer still: 'our mental functions employs geometrical symbols to express orientation in [kinespheric] space, but generally our feeling does not comprehend living movement within geometrical plasticity' (1966: 88). In other words, feelings expressed in the dynamosphere are numberless and non-geometrical. They are, to put it in a language Laban was familiar with, topological.[5]

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[4] Quote from Bergson's *Matter and Memory*, in Moore 2009:111.

[5] In an unpublished essay contained in the Laban Archive entitled 'Topological explanations and qualitative aspects' (L/E/56/10) Laban argues for a topological movement observation, in which human movement at a kinetic and social level might be expressed using a topological approach, in terms of qualitative aspects and continuous change, as opposed to discrete and geometric aspects. For a discussion on Laban and topology, see Moore 2009; Salazar-Sutil 2010, 2011.

In order to visualise movement of a dynamospheric character Laban used three basic models: the knot-form of the dynamosphere, the twisted circle form and the lemniscate form of the dynamosphere. In other words, Laban suggested that psychological forces driving human movement could be described within a spectrum of continuous movement. Rather than occurring, as kinespheric movement does, as fixed and separate positions in geometric space, dynamospheric movement occurs in terms of a continuous opening and closing of energy, as part of a chain of intensities that moves from the knot to the twisted circle.

These shapes, according to Laban, 'can be untwisted without being cut, and so have the possibility of evolving continuously in ever-new shapes' (1966: 96). To be more precise, physical movement occurring at a dynamospheric level implicate psychological forces that penetrate the emotional content of movement (1966:93), as a process of change from a stable shape (the knot) to a mobile shape (the twisted circle). Laban also identified the intermediate shape of the lemniscate band, which represents a model of psychological and emotional balance.

The use of the term topology might also be helpful to understand the dynamospheric properties of movement as recognising no difference between inner and outer regions of space, as well as the acentered nature of the dynamosphere. So whereas the centre of the kinesphere is singular, and it is located at the centre of the anatomical body, the centre of the dynamosphere is neither singular, nor does it correspond with the centre of the body. And whereas the kinesphere accepts this division given the boundaries and discrete divisions of the anatomical body, and while one dancer in the kinesphere will recognise a second one as its 'other', the same division does not apply at a dynamospheric level. This would mean that whilst two bodies cannot possibly share the centre of the same kinesphere, two bodies can indeed enter into the same dynamosphere, not least because emotions and psychological movements in human bodies do not recognise such difference. Instead, since dynamospheric movement is topological, two movements that seem different in kinespheric terms might be dynamospherically the same, as the same emotion might be turning one into another in continuous fashion. Within the dynamosphere, two or three dancers can be in fact one.

Fig 4. Laban sketch of human movement as dynamic stress. Courtesy of Laban Archive (NRCD, University of Surrey)

The choreosophical model

Now then, there is a distinction to be made between the models described above and Laban's philosophical model of the sphere. Laban points to such distinction when he speaks of fundamental and non-fundamental form, which is the subject matter of an undated and unpublished paper by Laban entitled *Choreosophy*.[6] Here, Laban makes a key distinction between spatial form described as universals, which take form as closed circuits (circle, lemniscate and knot), and all other forms, which are secondary manifestations of the fundamental strain of energy in matter. Crystalline and solid forms are thus materialisations

[6] The article in question (L/E/16/33), contained at the Laban Archive (NRCD- Surrey), is a hand-written document comprising 12 sheets, in which Laban discusses questions concerning space eddies and universal form (circles, lemniscates, knots). A further German text entitled *Choreosophie* (L/E/3/36), leads on to a discussion on the magic of the perception of relations in choreological space.

of more universal forms of circular movement shapes. In other words, solid shapes describe movement as it becomes congealed in matter, in skeletal and mineral architectures, that is, in concrete bodies. Within these bodies remain fundamental forms of movement in the way of dynamic stress, which are emotionally and psychologically produced.

This would suggest that the shapes we draw based on space harmonic analysis are twofold: some relate to the materiality of movement, to the shapes created by our material or skeletal body in material space, and then there are other shapes, inner shapes, which relate to the fundamental character and dynamic quality of all moving bodies (organic and inorganic, material and immaterial). The most perfect of these fundamental shapes is the sphere. It is, therefore, iconic of a sense of totality, of completeness and perfect symmetry. For this reason, the sphere becomes for Laban a metamodel, within which all other models can be contained.

The sphere visualises what the dancer is capable of being or the space he or she is capable of accessing. The shape, as Laban himself suggests in his piece *Choreosophy*, is 'compulsory and inescapable' (see footnote below). I would even add that failure to account for the spheric form of the scaffolding, or indeed any of the fundamental shape-patterns of dynamospheric movement (inverted circles, lemniscates and knots) means that the dancer remains divorced from a sense of his or her own unity with a fundamental aspect of dance-movement: which is, the power to integrate body and mind, physicalisation and ideation, energy and matter. By neglecting these perspectives we run the risk of forgetting that the dance, at least according to this reading, is a synthesis between embodiment and something else that lies within and also outside the body. It is a unity with the field of energies that moves life itself.

Choreosophy: some working definitions

Laban explained in his posthumous book *Choreutics* (first published in 1966) that the nearest term to describe the essential ideas of his work is *choreosophia*, an ancient Greek word which stems from the ancient Greek words *choros* (meaning circle according to Laban) and *sophia* (meaning knowledge or wisdom).[7] This wisdom of circles or 'choreosophy' becomes the trunk in a tree-model system from where three main branches of

[7] From meaning a circular dance, the word *choros* has been more generally used in modern Greek to refer to dance in general. Laban is referring here to the ancient use of the Greek word to refer to a choral dance, which as I already pointed out, was circular in shape. See Laban's *Choreutics* (1966: vii).

Laban scholarship might be said to stem, namely: choreography (any form of writing or inscriptional form of movement, particularly notation), choreology (general scientific study) and choreutics, the practice-based study of the various forms of harmonic movement.

Although *Choreutics* remains one of the seminal writings on space analysis, Laban had proposed the term in question as early as 1920. Furthermore, he continued to use it and develop the term until his death in 1958. In his first book *Die Welt der Tänzers* (1920: 13-14), Laban writes that choreosophy is grounded on a comparative study of myth, ritual and philosophy, particularly the Pythagorean cosmogony described in Plato's *Timaeus*, the beliefs of the followers of Dschella-eddin-Ruminu (the son of the founder of the Sufi order of the dancing Dervishes); the educational rituals of Confucius (particularly insofar as they have a marked leaning towards dance) and Nietzsche's view of the dancer as a complete being in his *Zarathustra*.[8]

In a 1996 lecture delivered at the Laban Guild, Laban scholar Valerie Preston-Dunlop described choreosophy as an evolving idea in Laban's thinking focused broadly round the 'wisdom of dance… which looks at the traditions and even the magic of dance'.[9] Choreosophy, according to this author, 'is all things to do with what Laban sees as the participation of the soul in dance over the ages, which you might call history, philosophy and ethnographical studies of dance'. Vera Maletic agrees with this author in saying that choreosophy is an evolving concept, which is why she highlights Laban's shifting definition of the term throughout the 1920's as the beliefs and assumptions of the dancer in the spiritual content of the dance (1920); the knowledge of the spiritual relationships of the dance content (1927), and the theory and aesthetics of the new dance and dance education (1929).[10] Clearly, the meaning of the term remains contested even for Laban himself, let alone the different schools that have taken up his work over the years.

Miriam Muñiz-Huberman joins this debate in order to argue that choreosophy is 'the idea that dance has a philosophic aspect which puts the human being in contact with nature, life, and the core of all being'.[11] This author adds that choreosophy consists in a

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[8] Laban expands his views on the complete being in Nietzsche's Zarathustra in an unpublished article entitled *Was war Nietzsche?* (What was Nietzsche?) contained in Laban Archive (L/E/26/7).
[9] The above quote is a transcription from a recording of a lecture by Valerie Preston-Dunlop, given at the Laban Guild Annual General Meeting, in March 1996 held at the Laban Centre for Movement and Dance. The recording is available from the NRCD's Core Audio Collection, Laban Archive (XZA/35).

[10] Quoted in Valerie Preston-Dunlop's *Dance Words* (1995: 614-5).
[11] Ibid. 615

'reverence to nature and life as the origin of dance, faith in the spiritual, healing and creative powers of dance, capacity of dance to integrate and bring wholeness […] and a mission to the spiritual development of the individual and to the creation of a new social order'.[12]

Laban's private collection, housed at the National Resource Centre for Dance at the University of Surrey, presents a particularly vivid picture of the evolving scope of Laban's choreosophical perspectives, particularly in the last decades of his life. From the late thirties and up until his death in 1958, the period during which he was resident in Manchester and Addlestone (Surrey), Laban wrote prolifically on the subjects of philosophy and choreosophy. Choreosophy relates in Laban's late research not only to an ancient wisdom, and not just to a wisdom steeped in neo-Platonic, hermetic and Jungian ideas of the soul, as previously thought. Rather, choreosophy becomes increasingly an exploration of a contemporary ontology of the dance. Choreosophy becomes a living philosophy told by the material, moving, and thinking body. Its understandings are obtained not through philosophical analysis and reflection, but through artistic research, and via the use of material techniques, mediating technologies and creatively devised methods for the empirical and experiential analysis of human movement.

Choreosophy and contemporary philosophy

Plenty has been said about the influence of ancient Greek philosophy and cosmology in Laban's thinking,[13] particularly in terms of a philosophy of space that draws on the idea of cosmic harmony as put forward by Pythagoras, Plato and Neo-Platonism. For the purpose of this analysis, however, it is perhaps more useful to make connections between Laban's thinking in his later years and contemporary philosophies of movement. Of particular interest is Henri Bergson's proposition that movement is an extension of being itself. In his 1946 book *La Pensée et le mouvant* (translated as *The Creative Mind*, 1992), Bergson takes a distinctly graphic approach to the study of duration as movement by providing graphic illustrations of what he calls 'movement-images'.

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[12] *Ibid.* 615

[13] For a study of Laban's cosmology and its relation to Greek philosophy see Gordon Curl's *Philosophic Foundations* (1966-69), a series of articles published in the Laban Guild Magazine, which constitute perhaps the most exhaustive study of Laban's philosophical foundations in Classical Greek thought. Valerie Preston-Dunlop and Anna Carlisle have addressed this more recently in the DVD *Living Architecture: Rudolf Laban and the Geometry of Dance* (2008).

Bergson's third movement-image, that is the elastic band, is of particularly relevance to Laban's own thinking. Bergson tells his readers first to contract the band to a mathematical point, which represents 'the now' of our experience. He subsequently asks his reader to stretch this band to make a line growing progressively longer. He warns his reader not to focus on the line but on the action it traces, in other words, he focuses the attention of the reader on what Laban calls a trace-form. Bergson writes that if we can focus on the action of tracing, then we can see that the movement (which is duration) is not only continuous and differentiating or heterogeneous, but also indivisible (1992: 165). Bergson notes that we can always insert breaks into the spatial line that represents the motion (this would constitute an analytical approach Laban-style), but the motion itself remains indivisible.

Like Laban's choreosophical understanding of the ontology of movement as a living energy; an energy that in its universal form ultimately escapes analysis, Bergson concludes from this practical and graphic experiment that there is always a priority of movement over the things that move. Ultimately, the thing that moves is an abstraction from the movement. Bergson's theory of movement-images, which is subsequently taken up by Deleuze in his book *Cinema 1: The Movement-Image* (2005), proposes a combination of visualisation and movement as part of a proprioceptive study of the philosophy of movement and movement visualisation, in a way that is well tuned with Laban's space theory. For Bergson, however, the elastic band is a more exact image of duration. This said, the image of the elastic is still, according to Bergson, incomplete. No image can represent duration for Bergson. An image is immobile, while duration is 'pure mobility' (1992: 165).

Laban's late choreosophical beliefs are likewise involved in a philosophical argument on the idea that movement not only goes beyond analysis when occurring in its pure form, but that it emerges from a meaningless and unknowable void as an event in itself, *ex-nihilo*, a creation out of the Nothing. In Lisa Ullmann's 1984 collection of unpublished drawings by Laban, entitled *A Vision of Dynamic Space,* Laban writes that the dance-movement is a creation 'out of the dark, out of nothing' (1984:76). The trajectory of his ideas move from a sense of harmonic space derived from solid geometry to a mathematical notion of null space, a space where all positive and negative charge exist in equal measure, thus cancelling one another.

> All things are astonishing appearances- out of nothing. Power of life and action comes out of this hidden homeland, creating presence. The words of a line are learnt

from a book. But they must be relegated first into the unknown to gain the power of presence when they are finally pronounced. Speech is a garment, a vestment of the wordless preconception of the meaning of the word. (1984: 76)

Laban's belief in this null space from where the creative presence of words, and presumable also dance-languages emerge, brings him surprisingly close to Alain Badiou's ontology of being and the event.[14] One could argue that Laban's later writings promote a secular theory of space harmony, a negative cosmology that sees movement as a life-giving event out of nothing, or what Laban calls the Nothing.[15] In this sense, at the heart of the choreosophical conception of movement proposed by Laban is the idea that movement demands a different ontology, whose being is not necessarily upper-cased, in the way a universal agent might be. In other words, it is not a supreme and causal Being, the Prime Mover or Unmoved Mover of Aristotle's theology. Rather, this ontology is multiple and ever-changing, which would suggest that dance can be described as the production of embodied thoughts that are always part of a larger and open-ended human initiative that is never free from choice, contingency, the limits of our material resources, and the arbitrary processes of culture and history.

[14] For a discussion of Alain Badiou's notion of the event as an emergence out of nothing, and his theory of being qua being in relation to Laban's choreosophical thinking, and more contemporary performance art theory, see Salazar-Sutil *Theatres of the Surd: Mathematical influences in European avant-garde theatre (1890-1980).*

[15] In a number of unpublished papers and notes housed at the Laban Archive at the University of Surrey (L/E/23/42, L/E/24/16, L/E/25/24), Laban speaks of the Nothing, or nothingness, as the ultimate source from where movement derives, and which is spaceless and timeless, neither inside nor outside. Laban speaks of 'the contemplation of movement by itself and for itself'. This movement *qua* movement, shows a relation between Laban's thinking and contemporary philosophical ontologies on being out of nothing, or the event of being in-itself, as noted above.

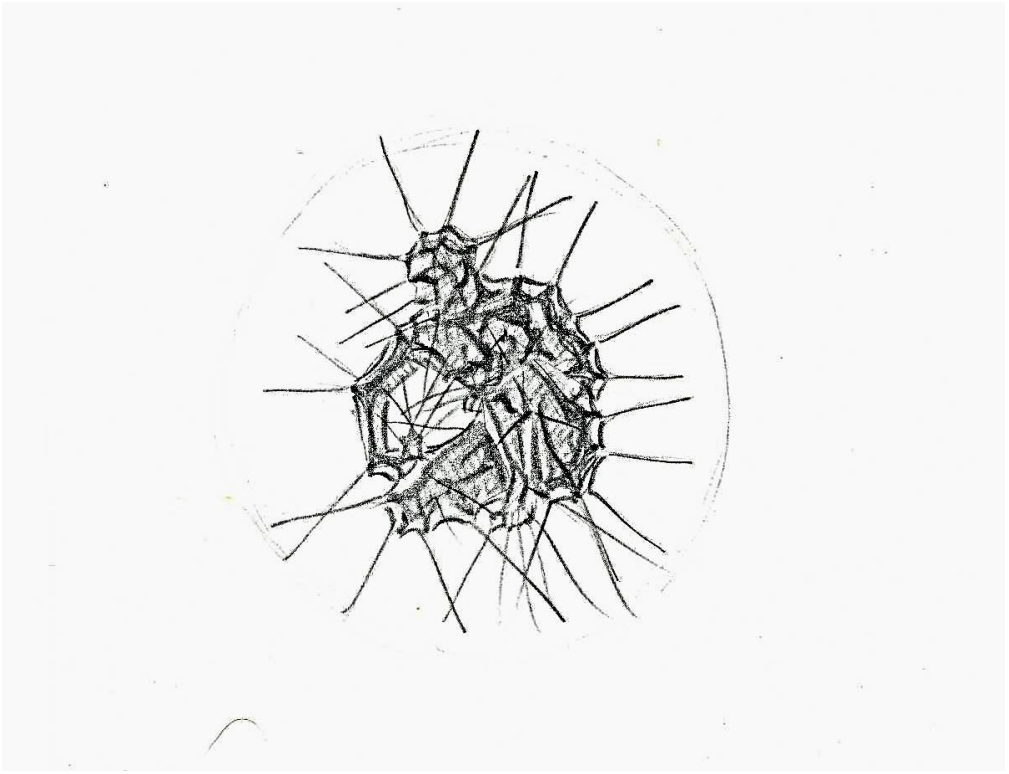

Fig 5. Sketch by Rudolf Laban showing the crystalline form of a human figure inside a sphere. Courtesy of Laban Archive (NRCD, University of Surrey)

Finally, Laban's theory of spherical movement resonates in a graphic way with a contemporary thinker like Peter Sloterdijk, who has proposed a 'theory of spherology' (2005), by virtue of the fact that one sphere (whether social, political or cultural) is generally conceptualised as residing inside another, which will in turn be contained within an even larger one. This Russian doll logic of spherical space constitutes a self-similar, inter-dimensional and co-extensive continuum, such that the relation between centre and circumference, inner and outer space, remains across many scales and dimensions. Sloterdijk's spherical ontology facilitates the fractal sense in which entities are constituted in relation to other entities, as overlaps, couplings, concentric arrangements, shared globalities.

This idea assumes in a more practical sense the movement-image of a sphere, whose opening also demands a closing. 'Being-in-the-sphere', writes Sloterdijk, 'is exactly this movement; it is the formatted *ek-stasy* of being outside of oneself but never immediately in the Whole' (2005: 232). Laban's metamodel is not all dissimilar: it also constitutes a paradoxical association between inner and outer, and a kind of 'formatted ecstasy', that connects the dancer to macro and micro scales of movement. It constitutes the multiplicity of being human in-motion, where one movement can start a chain of movements at

different scales, and which, when extended infinitely, make up a universal sphere of movement.

These new areas of choreosophical investigation suggest Laban's choreosophical perspectives are considerably more relevant as a contemporary ontology of the dance than previously thought. Unfortunately, as the connection with these thinkers lies outside the remit of this paper, it is perhaps worth addressing a question more pertinent to a dance studies approach: namely to what extent is Laban's spherical model a satisfactory explanation of this new ontology of movement, one that is simultaneously cosmological and practical in scope? What value do such ideas have for the theory and practice of dance, for its scholarly study, or for altering popular conceptions of this art? Finally, what roles do graphic methods and mediated thought play in the development of an understanding of dance ontology as 'material thinking' (Carter 2004) which is an emergent trend in more recent theories and practices of creative research?

The mediating eye: visualising the wisdom of circles

To answer this question, let us return for one moment to Laban's own definition of choreosophy as an ancient wisdom of circles. Equally old is the idea of the circular dance space and the circular dance, both of which create an ordering relationship between body and space, which takes us back to ancient Greek choruses and circular ritual dance.[16] The relationship carries a timeless link between the dancing body and its relationship with space, which is a question modern space theorists and theatre architects contemporary to Laban also addressed in relation to a spherical model.[17]

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[16] Likewise, it is no coincidence that the shape of Shakespeare's Globe matches the shape of the Greek orchestra. The Globe is, from a geometrical point of view at least, a 3D orchestra. It is a sphere, and for good reason. The well-known dictum 'All the world's a stage' demands that the stage take on the shape of the world, that is, a globe. Although we are now in a different orbit altogether, that of the theatre, it is worth focusing on this notion of self-similarity across disciplines of the performing arts, which the Globe neatly illustrates. Theatre is hereby proposed as a small-scale version of a larger world, which resides within an even larger sphere without. It is a stage insofar as there are many stages of spherical spatiality in an interleaved chain: individual spheres (performers), are contained within the theatre sphere (the Globe), which is in turn contained within the sphere of the theatrum mundi (the World).

[17] In 1924 Bauhaus artist Andreas Weininger came up with the idea of a spherical theatre that would be home for a new mechanical and abstract spatial and movement art. Weininger was hoping spectators would find themselves in a completely different relationship to space, in place of the one encountered in a conventional proscenium stage theatre. 'Because of their all-encompassing view', wrote Weininger, '[spectators] find themselves in a new psychic, optical, acoustical relationship; they find themselves confronted with new possibilities for concentric, eccentric, multidirectional, mechanical space-stage phenomena' (in Gropius 1961: 89). Thus, the spherical theatre sought to challenge the conventions of audience perspective and perception found in conventional theatre architecture. The purpose of the spherical theatre, according to Weininger, was to 'educate men

As Moore explains, a graphic approach to Laban (particularly via his drawings) allows us to understand this work as the systematic examination of the 'relationship between bodily range of motion and the types of designs a dancer can trace in the surrounding space' (2009: 46). By drawing and constructing 3D models of solid geometrical spaces Laban could understand empirically this essential relationship, particularly in terms of an interplay between the actual body and the virtual space it traces in movement. Dance is an understanding of space not as pure abstraction, in the way mathematics or philosophy might conceive of space, but as a tactile and sensory experience. As Moore points out, the regular and irregular polygonal shapes made up in the canvas of space by the moving body are not merely static entities but the culmination of carefully selected actions that impart form to the chosen medium (2009: 52). Media and materiality are necessary in creating this defining relationship.

The relationship between body and mind becomes integrated and synthesised in the choreutic and choreosophical perspectives, via a proprioceptive and synesthetic eye. In other words, we integrate body and mind by activating a way of seeing that captures movement in a multisensory way. This eye must be opened to understand space harmonic relations not only in the mind, so that this understanding is not only visualisable as abstract thought, or as an idea projected in the mind of the dancer. This eye must be opened to capture movement as a tactile and experiential sense. It is an eye that cannot be opened via the medium of the anatomical body, but through a technique and a technology. It is therefore an artificial and mediated eye. Thus, two important processes need to be put in place for dance-movement analysis to occur. Firstly, the body needs to be mediated by a technique or some formalisation of bodily patterns. And secondly, the analysis itself needs to be mediated by a technology of visualisation, which enables the researcher to capture movement as analytical data.

What Moore writes in relation to the function of live drawing and drawing in general, namely that it can be seen as an important tool in Laban's theoretical study of dance and movement (2009: 57), is relevant as much to drawing as any other medium of graphic analysis, including photography cinema, and in more current technological variations, digital video, computer animation and interactive vision technologies. Although many of these technologies were not available to Laban, he made extensive use of drawing,

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through the creative play of new rhythms of motion to new modes of observation, to give elementary answers to elementary necessities' (in Gropius 1961: 89). The changing relationship between spectator and space in this spherical theatre, which also features as a changed relationship between character and dramatic logic in Witkacy's notion of the 'spherical tragedy' (Salazar-Sutil 2011), is again a key notion of Laban's choreosophy.

diagrams, graphs, photography, 3D modelling and even cinema (as some of Laban's film recordings available at the Digital Dance Archives project recently conducted at the University of Surrey show).[18] These graphic media are the 'inventive methods' (Lury and Wakeford 2012), and the synesthetic eyes through which movement is captured and thought out. Analytical visualisation and the media used to produce it enabled Laban to think, through a radically different ontology, how a human being moves in the material and cultural world that surrounds us.

What is uniquely contemporary about Laban's philosophy of movement is not so much that he exposes, by way of analytical thinking and analytical practice, the assumption that dance-movement is not a random and indivisible physical force. What is remarkably contemporary about Laban's writings is that they present this relationship between body and ideal space not in a strictly Pythagorean or Platonic sense, that is, not from the point of view of a metaphysical and totally bodiless agency. The Platonic solids are not mathematical objects, they are real-life models of harmonic movement. Nor indeed does this model relate micro and macrocosm in a theological sense to an *imitation dei*. The harmony of the body does not reflect divine harmony. Laban abandons this positive cosmology (Curl 1966-69) to present an approach to movement harmony that is unambiguously analytical and scientific, where movement emerges out of nothing. What is most contemporary about this approach, which is perhaps why Laban has found a new readership in digital dance contexts, is that the media itself cannot be separated from the thinking and the analysis of movement. Laban thus proposes a kind of material thinking, where thought is realised via the graphic inscription of movement via visual media and technologies of graphic inscription and movement capture.

Solid Sense and the dancer in the virus: new choreosophical perspectives in digital dance

In the final section of this article I would like to consolidate and offer some concluding remarks on the main ideas presented in this paper, but in a spirit more inclined to Laban's own work, that is, by drawing on my own practice as a choreographer. In 2011 I worked alongside my company C8 on a short digital dance duet entitled *Solid Sense,* as part of an event organised by the Mathematics and Dance departments at the University of Surrey entitled 'Laban's Geometry of Dance'. This collaboration led to a discussion

[18] See http://www.dance-archives.ac.uk/#collection/Rudolf%20Laban

between dancers/choreographers, mathematicians and microbial scientists on the question of icosahedral models of space.

Our link between mathematics and art was facilitated by research carried out at the Laban Archive, which is also housed within the University of Surrey. However, the main idea of the project was met in a brief Lisa Ullmann footnote in her 1966 edition of *Choreutics*, where she points to the fact that viruses, like Laban's ideal of the human regular scaffolding, can be icosahedral. Laban's argument is an inviting one, and one which set the mood for our choreographic experiment, rich in choreosophical speculation. In order to choreograph Laban's concept that the movement of human beings evolves into harmonic relations in the same way that the real scaffoldings or skeletons of crystalline organisms and microbial organisms do, we turned to photographic and videographic methods of movement analysis, to visualise the human body as though it were dancing inside a virus.

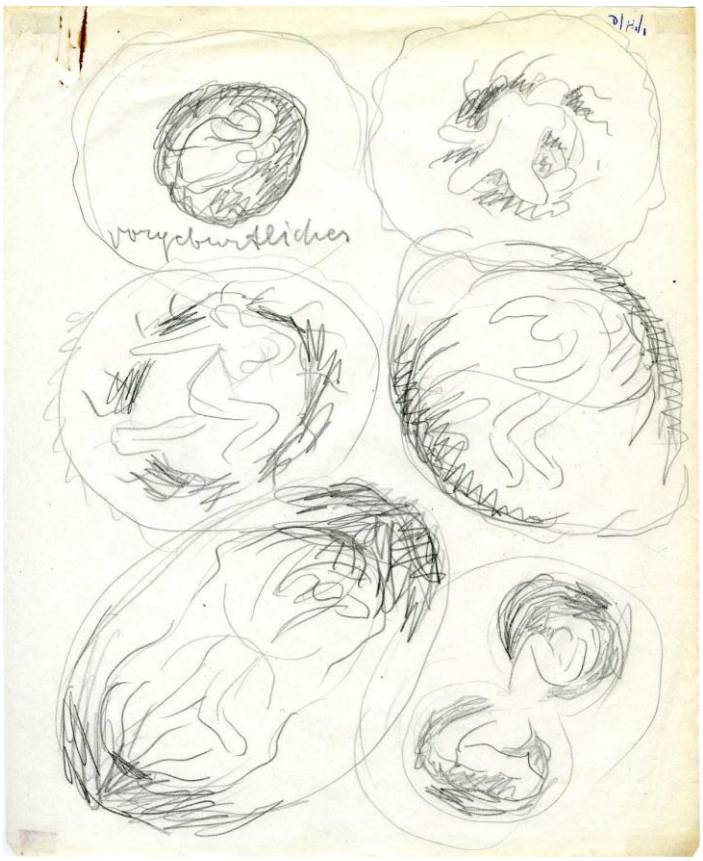

Fig 6. Laban's sketches for embryonic movement analysis. Courtesy of Laban Archive (National resource Centre for Dance, University of Surrey)

By taking up Laban's idea that human movement can be examined in a way similar to the one undertaken when investigating those which occur in the building of matter (1966: 103), we turned our attention to the fact that the icosahedral model occurs in mathematics, choreutics and microbial science. The potential for this object of space analysis to be a

fruitful one as part of an interdisciplinary investigation seemed evidently clear. Our research question then became a practical one: how can this choreosophical proposition, namely, that inorganic matter and living organisms construct themselves likewise according to crystalline form, become meaningful as a series of objects and mediated visuals that can help our dancers in an interdisciplinary exploration? What if instead of a dancer in the sphere, or dancer in the harmonic solid, we were to visualise the dancer inside a virus? What if we were to present Laban's theories in terms of a relationship between the body and a viral version of harmonic micro-space?

The aim of the piece became the integration, via a common graphic medium found in the visualisation of icosahedral models across the various scientific and artistic discourses employed, of movement harmony in the dancer's scaffolding and the virus' capsid. The investigation led to a need to understand the harmonic relations that are naturally occurring in the human body given its skeletal structures (its number of extremities and angles of rotation) in terms of a viruses' icosahedral symmetry. This icosahedral scaffolding, which Laban argues is the ideal model of space to fill the dancer's kinesphere, is related not to a model sense of kinetic space but to microscopic organisms that also function as regular organic structures.[19] In the case of the virus, the icosahedral shell is an efficient space-partitioning device that provides the organism with the most cost efficient mode of DNA packing. In other words, by comparing the human body to the virus, *Solid Sense* is visualised the body as part of a larger physical law of spatial patterning and spatial self-organisation in nature, which in the case of the virus leads to a perfect capacity to reproduce itself and to adapt.

Our research question crystallised in the course of a one-month rehearsal process in conversation with mathematician Rebecca Hoyle and virologist Nicolas Locker that addressed the question of the ontology of the dancer in terms of this self-similar organisation of the living. Life forms are nested within each other, and not only physically, in the way viruses exist within larger organisms. They are also self-similar, so that the icosahedral virus is a microscopic architecture that is isomorphic to the virtual skeleton of a moving human body.

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[19] In his classic book *On Growth and Form*, D'Arcy Thompson describes a number of microscopic organisms such as Radiolarians which, like viruses, take icosahedral shapes. For Thompson, the icosahedral and other regular polyhedral shapes of microscopic organisms can be explained as a tactical arrangement of crystalline molecules. In turn, these molecular arrangements can be explained as 'modes of packing' or space-lattices for the production of space economies in living organisms (1992: 167-174).

If not a universal inter-relatedness of movement in space, the dancer in the virus posed an interesting alternative to the dancer in the sphere model. The new model argues for a different perspective on the ontology of the dance, as a relation between movement and a harmony that is not in turn equatable with the good, or eukinetic life, but with kinesis pure and simple. A relationship that since Vitruvius is one of romantic idealisation, such that the inscription of the body in the square or circle facilitates the sense of a model human being in an aesthetic and culturally specific way (male, white, Roman), is here deprived of its bias. The link between body and spatial shape, between the biological and the physical-mathematical is here not given an idealistic representation of the ideal body in an ideal space. All bodies, all shapes, and all living organisms are subject to these laws, and not just the beautiful and good.

The regular geometric shape of the virus plays a very different role in the life and survival of this organism. It does not elevate the virus to an ideal shape or form, a sense of the unchanging world of Platonic form. A virus might well outlive the human body because of its efficiency and its economic shaping, which facilitates an efficacy of movement and an efficient use of space for the packing of DNA content ahead of the viruses' contact with a host organism. Upon contact, the virus deforms, the symmetry breaks, and the virus' opening shell allows for the DNA content to spill onto its host by stealth creating multiple new viral capsids and new viral entities as the DNA content quickly replicates itself.

Solid Sense sought to reproduce this moment as the two dancers came into contact with their audience at the end of the piece. The audience, which had up until this point watched from outside the space of contact (they had been moving around the dancers and the broken icosahedral sculptures strewn on stage), suddenly found themselves exposed to the dance as new hosts. What is being suggested here is that dance is a viral contact, a contagion of a dance DNA that is transferred from one dancing body to another that does not dance. The dance as a viral episode is therefore fitting to a reconsideration of what it is to dance itself into being, or what it means to create for oneself a danced-space made up of harmonic relations that are meaningful and communicable as a language and as thought. To dance oneself into thought does not mean dancing oneself into a romantic sense of harmonic life, to a balanced life in tune with cosmic harmonies. Nor does it mean that one dances oneself into a plenitude of being in a Nietzschean sense. Rather, it is to share in a sense of an energy that is living off some other organisms' death, a sense of energy that is kept at zero degree change by the that fact life and death occur in equal measure, cancelling each other off back into null space, back into Laban's nothingness.

Finally, it is worth noting that the dancer in the virus could only be realised in a digital media context. Firstly, video expands quite considerably on the kind of graphic method Laban employed in his drawings. The use of video in the graphic approach to movement analysis used in *Solid Sense* is relevant as a choreographic method, not least because the dancers designed their choreographic sequences in relation to video feedback analysis. In addition, video supports a new method in choreographic aesthetics. In the case of this particular project, capturing images of viruses is possible at the kind of resolution that is necessary for a detailed choreographic analysis only via cutting edge microscopic photography. The aesthetic manipulation of this image as part of a stage design is possible only via digital video design. Thus, only through digital technology can the images of the dancing body interface with the images of a virus in an integrated visual composition.

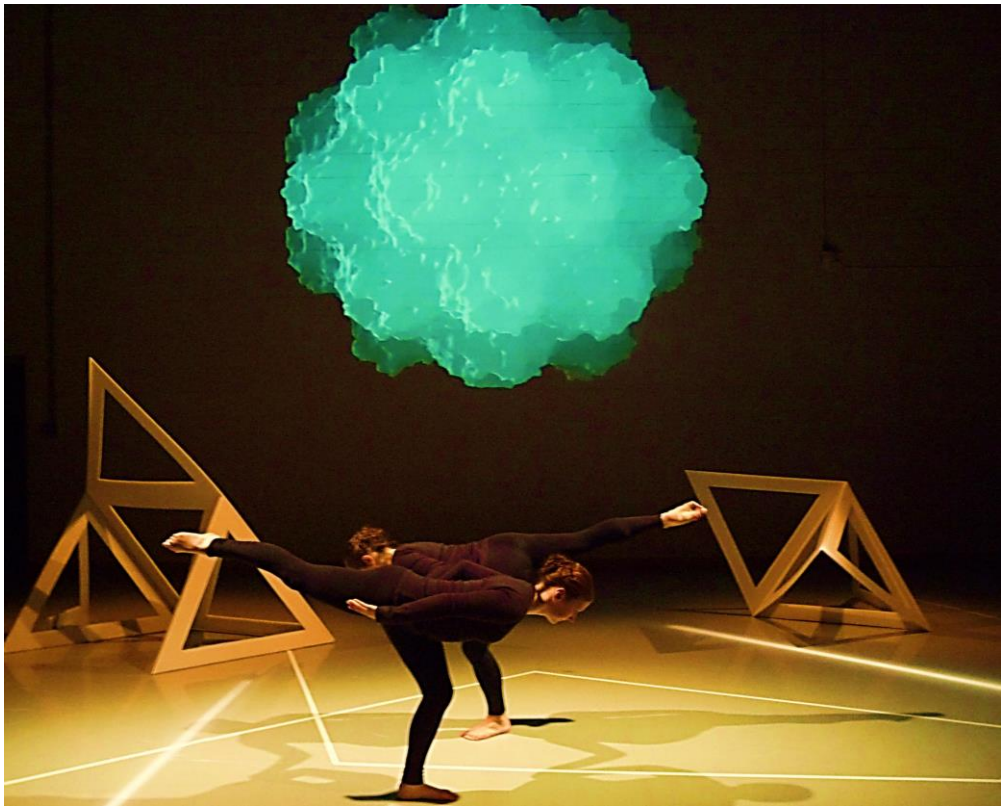

Fig 7. *Solid Sense*, a choreographic and multimedia exploration of the human body and virus as icosahedral models of harmonic space (Photo by the author)

The production's integrated design featured a video sequence showing a papier-mâché model of an icosahedron turning on one of its vertices. The model was filmed moving between a semi-transparent screen, and a white screen on which shadows of the object were also projected. The interplay of light and shadow, the layering of the image,

and the slow-motion framing of the video sequence, coupled with a broken icosahedron sculpture on stage designed by artist Juley Hudson, facilitated a sense of a broken-down symmetry, a fractured object with many centres and dislocated relations between itself and its surrounding space. The medium in question, video, allowed for such a detailed breakdown of the moving image, and such a slow moving sequence, that the analysis became increasingly localised to a microscopic portion of icosahedral space.

Solid Sense added to the argument made in this paper that digital technology and analytical visualisation provokes new understanding of space, via the power digital technologies have to capture movement in increasingly detailed and accurate ways. Through new media, Laban's graphic approach to the analytical and practical exploration of the dance becomes realisable in new aesthetic and research-methodological ways. Through new media, the choreosophical perspective becomes thinkable in a different set of spatial inquiries. In addition to the artificial eye of the video camera, there are new motion capture technologies that are opening up new ways of capturing movement, and treating movement, which throw unsuspected relationships between dancer and space. In a digital media context, the possibilities for a new interpretation of Laban's choreosophical model and his graphic approach to the study and artistic representation of movement seem all the more limitless.

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