Mereotopologies of Dance and Culture
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A knot, whose ends are glued together, shapes intertwined waves in space. Akram Khan and Sylvie Guillem tie each other – hand in hand – into a dancing knot. The indeterminacy of their motion does not allow to distinguish any origination or conclusion but only the wave motion that is performed –a fluid alternation of high and low positions reached by the wrists and elbows, a continuum of energy that is also oriented by balancing the movement between the right and the left arm. The undulation of the arm gestures is then completed by the undulation of the two bodies in counterpoint: the two figures are topologically equivalent, in the sense that the movements of the one are continuously mapped into those of the other. Choreographic form here can only be understood in terms of its de-formation.

Topology, defined by Brian Massumi as the science of self-varying deformation (one topological form being the specular deformation of another, the two being the different actualizations of the same hyperform, such as that of a knot), is the geometric schema of a paradoxical vision that can be exercised, or performed, on all material (and therefore physical, cultural, even technical) events. It is the vision that antagonistically opposes itself to the limits of the empirical sciences, to their extensive dissections and measurements, by affirming the reality of non-Euclidean intensities, of shared invariants or continuities 'abstracted' from the differences of particular events. Topology, in other words, as an 'abstractly empirical' scientific approach. This paper will test the functioning of this 'transcendentally empirical' vision, in the analysis of a particular choreography by Anglo-Indian kathak-dancer Akram Khan and French ballet-dancer Sylvie Guillem, entitled *Sacred Monsters*, a dance performed between classical traditions and contemporary styles. It is here, in the aesthetic field of an art form, that the science of topology reveals its main paradox: even in the continuous fusion and deformation of two bodies performing the same movement, raising an arm is always perceivable and thinkable as the gesture of raising an arm, a clearly discernible, measurable and even mappable discontinuity (going from point A to point B), to be realized in different ways (or styles). Our intervention will explore this basic ontological aporia, highlighting the fundamental oscillation of scientific topology between the continuity of material differences and the necessity of reducing them to abstract mappable points of differentiation.

In order to delve in this dilemma, we will draw on Alfred N. Whitehead's 'mereotopology', a topology of 'regions' (rather than 'points') where the ontological relation between A and B as perceivable and thinkable 'regions' allows us to bypass the infamous dualism of body and mind (or of process and point). We will take mereotopology as the basis of an immanent philosophical approach where experience, or the perception of empirical events (the elastic boundaries of 'regions', the spatiotemporal sections of events), is not detached from the 'mental' dimension of points as abstract ideas. Our final aim will be to philosophically isolate from the analyzed choreography some gestures as mereotopological invariants or perceivable sections and points of movement, simultaneously abstracting them from their physical

and cultural dimensions and revealing them as 'virtual objects' to be differently actualized.

The apparent linearity of every movement, for example of the simple gesture of raising an arm, is visualized by the topologist's eye as an aggregate of micro-gestures that cannot be easily isolated, presupposing multiple articulations of heterogeneous points imbricated into each other (for example shoulder, elbow, wrist as the different singularities of a raising arm). Thinking movement topologically does not imply any distinction between the qualities of particular choreographic forms, for example of contemporary dance as a more fluid improvisation opposed to the Euclidean rigidity of classical dance. Rather, it requires an abstract thinking of the gesture as an idea, that which generates not so much the fluidity of movement in itself but its precision; by mapping the points or moments of inflection that constitute movement, topology characterizes dance as a precisely choreographable pattern in space and time. This topological vision resonates with the concrete manifestations of dance, by showing how abstract gestural patterns already possess the potential to become actualized and organized among different bodies and social groups. All the physical and cultural values, all the normative and subversive possibilities attributable to dance are already implicit, for us, in the mathematical pattern of a single gesture or step.

There are different ways in which the dancing body can perform a rotational pattern that goes around its vertical axis; in other words, there are different ways in which it can make a 'turn'. But what all choreographic cultures share is the deployment of particular bodily techniques to achieve the balance and impetus (or speed) that are proper of every turn: 'spotting', the technique used to avoid dizziness while turning, prescribes for example that the head stays facing one direction and the eyes focus on a particular visible point (the 'spot'), while the body turns; when it can no longer maintain its position, the head turns instantaneously in the direction of the turn, coming around to the original spot or to a new spot - depending on whether it is a full turn (360 degrees) or ½ turn (180 degrees). The impetus of a turn, on the other hand, is achieved by setting up a torque through pressure of a foot on the floor, which is released as a spin. These particular inflection points (spotting point and torque point) can be defined as the ideal, topological generators of all turns, at the same time allowing for the mathematical measurement of rates of speed and synchronization in the dance. At this point, we cannot but note, once again, an implicit discrepancy between the individuation of points, the numerical measurement of gestures or the calculation of speeds, and the vision of a fluid and uninterrupted continuity of movement as a sum of microscopic gestural articulations imbricated into each other, where it is practically impossible to isolate any precise unit. What is, in other words, the relation between movement and points? How can points be abstracted from the continuities of our material and thinking processes, and become fixed entities of choreographic composition or measurement?

Whitehead's geometric and philosophical theory of 'mereotopology' builds a connecting bridge between the empirical continuity of movement and the atomistic seriality of points. The definition derives from the juxtaposition of two terms (and methods): 'mereology', or the formal ontological theory of parts and wholes, and a topological component that is the study of the transformative relations between objects in space; mereotopology, we could say, is a mereology that studies not only the division of every thing, object, movement or process into wholes and parts, but

also the boundaries and interiors of wholes, the relations of contact and connectedness between wholes and parts, and topological concepts such as that of a 'point'. This scientific and ontological schema is also defined as a region-based model of physical space, in which the basic parts or entities are 'regions' (volumes, lumps, spheres) rather than 'points'. What can be phenomenally observed, in other words, are not points but events (such as a specific movement of the arms, or 'port-des-bras', a bending of the knees, or 'pliè', a turning of the whole body, or 'pirouette', in the norm of ballet) whose duration is always a slice, a region or a section with a temporal and spatial thickness of its own. From different durations, or different spatiotemporal sections, abstract discrete and finite states such as points, lines and surface forms can then be deduced as logic and ideal limits of exact precision. It is, in other words, as if every section, every gesture contained in its own spatiotemporal volume a series of concentric gestures, in a continuous relation of gestures 'within gestures within gestures', all in contact with each other and degenerating in a precise and discreet (rather than infinitesimal) point: the topological point of variation, when and where the knees and the elbows bend, or the head turns and the foot presses the floor.

How can a turn, however short and fast, be described as a slice in the performance space and time? In *kathak*, stationary turns are combined to travelling turns, so that the body comes to occupy different spatial regions of the stage. Double, right and left turns succeed each other, slicing a linear temporal extension into varying repetitions. In each of these turning successions, the arms are extended with a lively jerk in order to balance the body's axis, and then they return, closed, at the level of the chest with a small rotation of their own. At the same time, in some of these turns, another 'micro-section in the section' is delineated by the rapid spotting of the head directed upwards, drawing a microscopic turn that is completed by the search for arm direction towards the floor; a stopping position follows. What can appear as a simple continuity of turns at speed is in fact mereotopologically characterized by a repetition of very precise spatiotemporal sections. The arbitrary appearance of a point in a movement continuity acquires here a mathematical (and philosophical) logic: a turning section in fact contains a series of concentric turns, each containing a smaller rotation of the arms and head and so on, but not to infinity: the abstraction of a 'class' of turns makes it possible to reach a sort of turning primitive or prime, a singularity to be unambiguously, precisely defined as a point, or the logical limit of a series. What is therefore at stake is neither the imposition of an external grid of Cartesian points nor the internal dissolution of spacetime into infinite infinitesimals, but a 'degeneration' of smaller and smaller events up to their limit point, the object of an intuitively rational feeling/thought, or of a logical operation of the body/mind.

The particular relation of mutual in-formation between the continuously moving body and the spatiotemporal point (for ex. of spotting or torque) suggests the idea, or the image, of the spinning dancer as being almost immobile in space. In fact, to be immobile, or immutable, is 'only' the abstract form of the dancer's gesture, or its idea: an idea, for Deleuze, loses its mutability or its property of variation, and "represents only the immutable." (Deleuze, 2001; 171-172) We could also say that ideas share the *static* nature of the virtual, in the sense that they have a capacity to *congeal* and *last* (like a freeze-frame) or remain the same, for the whole duration of their concrete actualization. In SG's performance, the idea of the turn in fact 'returns'. Full spinning turns are performed this time in *attitude*, the dancer's working leg raised and extended to the back but bent at the knee; the spotting point is reached by the

head when the figure is in elevation and the turn is performed at the high level (jumped turn) with both legs bent; finally, another region of the turn appears when the dancer spots her direction on a floor point and performs a full turn pushing the body down towards the supporting leg. Drawing a uniform linearity, the cadenced repetition of her turns traces a clear boundary between the turning section and the rest of the dance, but also between the turns themselves; at the same time, the cadence mirrors an internal quantitative differentiation between micro-turns, all connectively related as 'subsets' of a turn, and also a qualitative differentiation between the turns themselves. The idea of the turn becomes the analytical unit of a continuous quantitative and qualitative variation, an infinitely actualizable universal that is ideally the same but is physically and culturally de-formed in the divergent movements of both dancers.

The two bodies now dance in unison: they share the same gestures, space, direction and time. Their choreographic material is made of travelling sections of high turning elevations and of circular arm gestures, with a variation of the same sequence in different directions: face to face, side by side - they dance/play the same choreographic hyperfigure, underlining the virtuality of the choreography's invariants. Not a simple continuum but ideal gestures in transit from one body to the other, from one tradition to the other, highlighting the relation by which the two dancing figures are connected and transformed. The gentle and lyric physicality of SG makes her gestures more linear and fluent, while the different geometry of AK's body makes his movements faster and energetic. In a particularly significant frame, the two stop after a turn, in a specific carriage of the arms that reflects their respective traditions. SG stop is in I° *port de bras* (the dancer keeps the fingers of both hands almost touching to form an oval shape, and almost touching the hips), while AK stops in the basic *kathak* arm stance (arms raised at the side of the chest with flexed elbows and wrists). Presenting on the stage the ideal geometry of their original techniques, the two dancers actualize these fixed patterns in continuous variation, as if on a third 'abstract' stage where cultural, ethnical and physical differences magically flicker and then disappear.

References:

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