A paper given at the Problems of Action and Observation Conference
Taiwo, O., & Wood, J., (1997), "Some Proprioceptive Observations of Being-With", paper given in collaboration with Olu Taiwo at the "Problems of Action and Observation" Conference, Centre for Innovation and Co-operative Technology, Amsterdam University, The Netherlands, (April, 1997)

Some Proprioceptive Observations of 'Being-with'

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Abstract

This paper will compare several paradigms of 'observation' as a way to frame questions concerning situated observation-in-action. It will do so by comparing epistemologies of individualism and collectivism, dualism and monism. In particular, it will use the active experience of rhythm as a basis from which to reflect upon the criteria for 'epistemological validity' in the framing of observations. Rather than using 'objective' methods to observe an autonomous 'object'[1] the authors describe an experiment in which groups of invited observers were asked to compare the eudemonic aspects of two modes of hand clapping. The experiment challenges solipsistic Western myths of the observer as autonomous ego and seeks to promote a heightened awareness of the participants' collective presence. In acknowledging that the observer may be inseparable from what is to be observed, it compares two particular modes of rhythm. It then seeks to identify protophenomenal effects which help to transform apprehensions of the 'collective other' into a sense of the 'collective self.

Western dualism

In exploring the idea of 'observation' it may be helpful to highlight two features of the Western mindset; 'individualism', and 'dualism', as it can be argued that both concepts were important to the framing of scientific epistemologies which have dominated our modern understanding of the term 'observation' and may also have influenced certain ideas concerning 'action'. Where 'monism' assumes the world to be a singular, contiguous whole, dualism[2] implies that it has two faces which may sometimes regarded as opposites, and although this confrontational aspect of Western dualism may seem to resemble the oppositional logic of ying and yang it is different. Where Taoism, for example, identifies binary oppositions as the essential ingredients for harmony and balance, Western dualism tends to see them as the potential sites of struggle. It has been suggested that dualism has provided the restless dynamism behind Western inventiveness as an agent of 'progress'. A much discussed example of dualism is the idea that the mind somehow

[1] i.e. Kant's notion of the 'thing-in-itself' ('ding-an-sich')
[2] classical Hegelian thinking..

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resides in a domain which is 'other' than that of the body. This type of binary distinction also effects us in other experiential ways. Whereas dualistic thought is inclined to polarise our sensory expectations, tending to make us anticipate feelings which are either 'good' or 'bad', 'painful' or 'pleasurable', monism tends to interpret the world as a variegated whole. It is always difficult to generalise or to compare sensations but we could argue that where, for example, the philosopher Chuang Tzu talked of "contraries indistinguishably blended"[3], Westerners tend to expect, or to find, sharper distinctions between values.

Western individualism

Similarly, by representing the human self as a monadic being, modern individualism has also tended to accentuate and applaud difference; especially differences of view. And by constructing the individual in contradistinction with 'society', the individualistic mind-set tends to elevate the individual's view above that of the views of society as a whole. One of the key assumptions which underpins Western philosophy is the idea that individuals are essentially autonomous and different from each other. This idea is often attributed to the political arguments of Socrates, who challenged the prevailing assumption that truth is singular by persuading citizens to identify the differences between collective and individual observations. Romanticism provides more recent examples: the valorisation of individual perceptiveness, the fascination with the idea of inherited genius. Western iconography sustains strong individualistic assumptions in its development of representational perspective drawing systems which, in emphasising a monocular mode of looking, tend to overstate the separateness of viewer and viewed and their respective locations[4] in space. By contrast, in the collectivist mind-set individual observation tends to be moderated by an ongoing process of deference to the apprehensions and opinions (view/s) of other observers. In a culture of individualism the question of the observer's viewpoint is paramount, and it is for this reason that whereas Eastern painting celebrates the flatness of the picture, Western art developed a powerful rectilinear vanishing point perspective system which became almost synonymous with a notion of observational 'reality'.

Individualistic, dualistic modes of research

Many aspects of modern research methodology evolved within the idealistic, individualistic, dualistic culture of the West. In cultures which are both monistic and collective, if 'truth' can only be legitimised by agreement with the group then independent 'observation' by a particular individual risks being seen as irrelevant, eccentric, or even treacherous[5] to this 'truth'. By contrast, in dualistic, individualistic cultures, if 'truth' is understood to derive from those individuals invested with authority then collective beliefs may be dismissed as 'uneducated', 'inexpert', 'superstitious', or 'fanciful'. These two systems incorporate mind-sets which seem incommensurate with each other. In the more monistic, collective culture of Japan[6], for example, the Western idea of 'observation' may seem baffling and strange, requiring a great deal of historical and philosophical explanation before it can be understood.

Observation and power

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[3]Chuang Tzu, quoted by Naess, A., in "Ecology, Community and Lifestyle", Cambridge University Press, 1989, p. 41

[4]Viewpoint often also implicates socio-political power relations.

[5]Of persons: their attributes or actions, characterized by treachery; deceiving, perfidious, false; disloyal, traitorous. Of things: Deceptive, untrustworthy, unreliable; of ground, ice, etc., unstable, insecure.

[6]We are indebted to Ms. Miho Ito for her informed comments conceming Japanese culture and attitudes towards 'observation' and the individual.

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However, there are certain ideological and metaphysical contradictions within this historically constructed idea of the individual observer. These are exemplified in the numerous and often contradictory meanings of the word 'subject'[7]. Importantly, the unequal, dualistic, power relations which prevailed when the principles of Enlightenment science[8] were being developed are evident in the idea of a 'subject'. Originally, a 'subject' was essentially an inferior, dependant, or subordinate person as, for example, someone who is under the dominion of a monarch, or who is indebted to another person. In this sense there is always a 'subject' in the act of observation, and this reminds us that the issue of power[9] is always difficult to disentangle from the concept of observation. The rationalistic Western idea of 'observation'[10] still carries a strong sense of one-way jurisdiction and control. For example, it is more likely to imply a static, non-participatory role for the observer. Symptomatically, when describing his dualistic notion of the human mind and its observation of the 'outside world', John Locke used the metaphor of a room containing a law judge. He pictured a solitary judge "in chambers"[11], and wrote that sensations are conveyed "from without to their audience in the brain" to what he called "the mind's presence room", and it is hardly surprising to note that Bentham's 1791 invention of the Panopticon used the same principle in his design for the observation (i.e. 'subjection') of inmates in a prison.

A solipsistic model of observation

However, a similar model of observation also inspired Rene Descartes to concentrate on the individual's consciousness as the 'subject' of his perceived states[12] as the only rationally justifiable basis for philosophical inquiry. However, this shows up a confusion between the ideas of 'subject' and 'object'. For this reason, 'subjectivity' has also come to mean the mind's consciousness of itself. In his famous proposition "cogito ergo sum" Descartes ultimately posits an omniscient status for the individual (inner) self. However, by implying that the (outer) world may merely be a subset of the 'mind' he leaves us in some doubt as to what can legitimately be observed. By introducing the idea that it is more intellectually reliable to observe 'one's own' mind than the 'objective' world Descartes, and others, reinforced the sovereignty of individual observation. Hence, the word 'subject' seems to have come to be used in the opposite senses of 'active agent', and 'instrumental object of scrutiny'. And in using intellectual scepticism to eliminate unproved assumptions about the role of the observer, Enlightenment thinking posited the legitimate scientist as a kind of 'self-critical ego' whose presence was, in dualistic terms, 'other' than the World itself. This led to a construction of the legitimate (scientific) observer as a singular, static, non-participating, self-denying agency, which must always be post-hoc, and spatially 'beyond' the observed subject.

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[7]Aristotle used the term 'subjective' it in three ways: the material out of which things are made, the subject of attributes, the subject of predicates.

[8]As can be exemplified by what Robert Markely - in "Representing Order: Natural Philosophy, Mathematics, and Theology in the Newtonian Revolution", in Hayles, N. K., "Chaos and Order; Complex Dynamics in Literature and Science" - calls 'Newtonianism' (i.e. the influential but misleading simplification of Newton's findings). It can also be exemplified in Sir Francis Bacon's chilling vernacular concerning the scientific practice of observation and inquiry.

[9]Foucault, M., "Discipline and Punish", trans. Sheridan, A., New York: Pantheon, 1977

[10]The term 'surveillance' has a particular pognancy where technologies designed to 'observe' ordinary citizens continue to proliferate in public places everywhere.

[11](Latin: 'in camera')

[12]1821 Coleridge in Blackwell Mag. X. 249/1 "The subject witnesses to itself that it is a mind, i.e a subject-object, or subject that becomes an object itself."

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Observation and representation in 4D

How can we elucidate this idea of the 'objective' observation of a 'subject'? Doctors and artists still use the term 'subject' when they use a human 'body'[13] for anatomical observation. Their genres of observational drawing entail a complex process of concentrated visual perception[14] combined with deductive modes of thinking and freehand 'mark making'. The practice of freehand drawing is a useful paradigm for reflecting upon other modes of observation and representation because it operates within a timescale in which the factors being observed are seen to change at the same time that representation is taking place. Such practices are epitomised by conscious moments of sharply focused visual perception and identification, incorporating techniques of reflection-in-action[15]. How can we talk about the act of 'objective' drawing? What do we observe when we draw, and what do we know when we have seen and drawn?

Freehand drawing is no longer a significant observational tool for science, and we tend to look for instrumental validation for such an embodied mode of observation. Why is this so? An interesting limitation to the embodied axiom of observation is the mind-body's observation of events with reference to clock-time[16]. Here, science tells us that there are surprising temporal discrepancies between events as we believe them to unfold in the world, and their apprehension as it is registered in the brain of an observer. Work by Libet[17], for example, suggests that sensory stimuli at the finger-tips, for example, take < 0.1 sec. to reach the brain, and a further < 0.4 sec. for the brain to process them into an intelligent response. He argues that we do not notice the delay, as it is a standard feature of the way we function. Specifically, this is because our pathology has evolved together with a neural mechanism for "backward referral in time" that enables us to subjectively compensate for the cognitive time lag.

In looking at the temporal implications of embodied[18] situatedness it may be helpful to cite Albert Einstein's 'thought experiments' which challenged dualistic protocols of experimentation and observation by adopting more tacit[19],[20],[21] modes of observation and inquiry. It would be difficult to deny that Einstein's observational techniques are important observational axioms which provided the basis for more orthodox methods such

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[13]An emphasis on the corporeal aspects of the human being are understandable, given the primary Christian site of the sacred as the 'body of Christ'.

[14]Crary, J., "Techniques of the Observer", October Books

[15]Schon, D., "The Design Studio", RIBA Publications Ltd., London, 1985

[16]Wood, J.. "Temporal Alienation". Paper given at the "Speed" (Doors of Perception) conference, Amsterdam; November, 1996

[17]Libet, B., Wright, E., W., Jnr., Feinstein., and Pearl, D. K. "Subjective referral of the timing for a conscious sensory experience" Brain, 102, (1979)

[18]in 1907, Einstein was sitting in the patent office in Berne and had what he described as "...the happiest thought of my life"...which was the realisation that if a person is falling they will not feel their own weight. This led to the conclusion that, to a falling observer, the trajectory path of a cannon ball would appear to be in a straight line. From this he deduced that space itself is really curved, and it is this intrinsic curvature which produces the effect of gravity.

[19]Ryle, G., "On Knowing How and Knowing That", in "The Concept of Mind", Hutcheson, London, 1949

[20]Polanyi, M., "Tacit Knowing", in "Knowing and Being", Routledge & Kegan Paul, London 1969

[21]Dreyfus, H.L. & Dreyfus, S.E.., 'Mind over Machine; The Power of Human Intuition in the era of the computer 1986 p. 16

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as mathematical and verbal reflection and argumentation. They contain an important proprioceptive component which exceeds the Cartesian model of direct perception and cerebral response by including 'actions observations-reflections' of what Einstein acknowledged to be a 'muscular'[22] component of psychical activity. Arguably, by combining these techniques with a monistic (single-wave) notion Einstein thereby cast a shadow over his own quest for a general theory, or totalising representation, of the universe. If we extrapolate from Einstein's assertions about the limits of mathematics and its veridical correspondence with the world[23], we may doubt that the subsequent quest for a 'theory of everything' (TOE) could ever be completed in any satisfactory or meaningful way.

'Objective' versus 'concensual' truth

We can polarise the many meanings of the word 'truth' into those which denote a strong consensual practice and those with claims to 'objectivity'[24]. Broadly, whereas the first is an aspect of social unity, the second lays claim to an ontology untouched by individual human knowledge or its social context. A refinement of the Cartesian non consensual idea of truth is the Kantian notion of the 'ding-an-sich' ('thing-in-itself')[25]. In Kant's model the essential truth is believed to be beyond human apprehension[26], and, unlike the 'truth' of social consensus, ultimately 'non-negotiable'. The idea of the 'ding-an-sich' was crucially important to the development of Western science and technology since it permitted a great deal of confident and productive speculation, unhampered by the thought that the observer might be an influential component of what is being observed. This innocent assumption was later challenged by a number of people including Godel[27] and Heisenberg[28] whose insights concerning interpretative, linguistic and metaphysical issues led to increasing self-reflexive accounts of the relationship between the observer and the observed.

Theories and views

Kuhn, Feyerabend, and others have argued that science depends on a particular shared 'mind-set' in order to be recognisable as science. We could add that, in more precise

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[22]In a letter written to Hadamard, Einstein wrote: "The psychical entities which seem to serve as elements of thought are certain signs and more or less clear images which can be 'voluntarily' reproduced and combined....The above mentioned elements are, in my case, of visual and some *muscular* type."Hadamard, J., "The Psychology of Invention in the Mathematical Field", Princeton University Press, 1945; quoted in Penrose, R., "The Emperor's New Mind", Vintage, 1989, p. 548

[23]"Is human reason, then, without experience, merely by taking thought, able to fathom the properties of real things? In my opinion the answer to this question is, briefly, this: - As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality." Einstein, A., "Geometry and Experience", an address to the Prussian Academy of Sciences in Berlin, lanuary 27th, 1921 from "Sidelights on Relativity" by Albert Einstein, General Publishing Company, Canada, 1983 p. 28

[24]Rorty, R., "Objectivity, Relativism, and Truth", Cambridge University Press, 1991, in attempting to replace the idea of 'objectivity' by "unforced agreement" (p.38) Rorty claims that science replaced priests as the intermediaries between mankind and sonething 'beyond itself'.

[25]The so-called 'thing-in-itself', as opposed to its phenomenal presence.

[26]Hodgson, S., H., "Time and Space" (1865): "The Ding-an-sich is that which cannot be reached or affected by consciousness."

[27]Godel's 'incompleteness theorem of 1931

[28]Heisenberg's 'uncertainty principle' of 1927

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terms, a shared 'relational mind-body-set'[29] is what is needed for such a complex form of discourse. Typically, an 'individual observer' makes a 'representational model' such as a theory or explanation which must enfold any, or all, imagined 'secondary observer/s' in a kind of shared, or shareable, representational view'. This act has a finite (high) probability that different spatio-temporal views of the 'same' models will be incommensurable with each other. In other words, observers are always bound by the need to formulate a given representational view on behalf of an implied observer who is - or will be - always already differently situated in space-time. Hence scientific 'laws' are unsituated abstractions which appeal to our ability to reflect upon certain aspects of the world, retrospectively and summarily, i.e. upon previously observed events. In phenomenological terms we could use a theatrical metaphor to suggest that every theory has a 'front' and a 'back', in keeping with the Western tradition of a stage with proscenium arch and an audience 'out front'.

The completeness of represention

Explanatory, or representational models are always incomplete generalisations. There are several reasons for this. First, in the adopted language of representation a given number of 'accidental features'[30] are always present. For this reason linguistic redundancies are always likely to be additional to those 'essential features' which make representation effective. Possible simplifications are therefore chosen tactically for two main reasons. Firstly, to exploit the opportunities of a particular discourse, and to make truth claims plausible from a generalised and preferred position (i.e. in the audience). If this were not so, proposed models of the world would be indistinguishable from 'reality', and readers or, rather, their 'co-authors'[31], would always fail to register them as truths[32]. If they were too specifically situated they would not permit the necessary re-interpretation (i.e. imaginative accomodation of differences) by differently situated 'reader-viewers' and would fail, therefore, to inspire a concensus within the (scientific) community.

In a monistic, or holistic, world classical science's context-denying models which facilitated the separation of observer from observed are unsustainable, and it becomes difficult to separate theory from practice, author from reader, question from answer. David Bohm extrapolated from his insights as a quantum physicist to confirm this scenario: ".....at no stage can we properly say that the overall process of thought begins or ends. Rather, it has to be seen as one unbroken totality of movement, not belonging to any particular person, place, time, or group of people."[33] Perhaps the most unsettling feature of the quantum world is that we may not get the 'same' answer when we 'repeat' the question! In this regard, the new paradigms of observation and action may, perhaps, begin to resemble more closely the familiar human predicament of 'being-in-the-world'[34]. One

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[29]"everyday language is a part of the human organism and is no less complicated than it." from "Tractatus Logico Philosophicus", Wittgenstein, L., Routledge and Kegan Paul 1961 (1921) p.35: 4.002.

[30]Tractatus Logico Philosophicus, Wittgenstein, L., Routledge and Kegan Paul 1961 (1921) p.S9:"3.34 A proposition possesses essential and accidental features. Accidental features are those that result from the particular way in which the propositional sign is produced. Essential features are those without which the proposition could not express its sense."

[31]if we adopt a hermeneutic position 'readers' become co-authors of the text.

[32]Plato's reflections on mimesis argue that representation must always be incomplete for us to notice what is being proposed.

[33]Bohm, D.; "Wholeness and the Implicate Order"; Routledge & Kegan Paul, London, Boston and Henley; 1980; p.59

[34]Arguably, the self-reflexive aphorisms of Heraclitus and Cratylus are more helpful here than the self-denying philosophies of Plato and Aristotle

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possible benefit of this approach may be the introduction of more convivial[35] modes of observation and action. This would also tend to promote more ecologically benign social consequence within the practices of writing and reading, because observations would probably need to be more actively situated and represented in a way which enabled the collaborative 'sharing' of differently situated views of participants in space-time; i.e. the socialising task of a conference when 'author', 'observer', 'subject', 'reader', etc. come together in a more anarchic[36] society of 'observers' and 'knowers'.

Embodied experiments of observation-in-action

In our experiment, the hand-clapping modes reflect different cultural paradigms in that one is readily exemplified in a European tradition (the 'Linear Beat') while the other derives from West Africa (the 'Return Beat'). In the engaged actions[37] of clapping the participant's performative presence is guided by, yet may considerably exceed, the minimum expectations implied by the rules for 'clapping', and it is our impression that, whereas in the 'linear' model, the clapping rules appear to conform to the prescribed effects, in the case of the 'return beat', observation and action cannot so readily be differentiated.

Linear Beat	**Return Beat**
more individualistic model	more collectivist model
more dualistic model	more monistic model
focuses on the specific	more holistic
reveals the 'external object'	reveals a sense of 'presence'
more deterministic	self-reflexively experienced

Comparisons between the two 'clapping' modes

Comparing the 'linear' and 'return' beats

The 'linear beat' is probably best characterised by a strictly regular pace and metre which may evoke mental images of marching, or purposeful walking. It is not inevitably brought about by a mechanical reliance on, for example, the artificial beat of a metronome or digital pulse. Rather, it is dependent upon the user's active compliance in the illusion of *always anticipating* the next step in an evenly paced journey. This image invites contrast to the second mode - the 'return' beat - which, when enacted, usually gives rise to a more 'centred' and fully 'embodied' experience by the participant. If participants can understand that the image of ambulating forwards 'beyond themselves' in a straight line is an active

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[35]Wood, J., "Situated criticism and the experiential present, Journal of Design History, editor Prof. Nigel Whitely, April, 1997

[36]Paul Feyerabend also calls for a theoretical anarchism in which observations and their social justification are brought closer together. ~The results obtained so far suggest abolishing the distinction between a context of discovery and a context of justification and disregarding the related distinction between observational terms and theoretical terms. Neither distinction plays a role in scientific practice. Attempts to enforce them would have disastrous consequences." Feyerabend, P., "Against Method", verso, 1975, from his abstract of Chapter 14.

[37]This refers to the immediate present tense of engaged actions: c.f. Wood, J. B., "Curvatures in space time-truth", introductory chapter to "The Virtual Embodied- presence l practice l technology", (ed. Wood, J. B.), Routledge, 1997 (at press). It entails an idea of 'within-time-ness' which invokes a temporality of preoccupation or concem. Although Heidegger appeared to base his ideas on a modified (everyday) version of Aristotelean time, his 'within-the-world' notions of the 'ready-to-hand' and the ~present-to-hand' come out of 'within-timeness' (his context concerns 'besorgen', or 'looking after'....caring for....being concemed with).

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metaphor which is appropriate to the 'linear beat', then they usually understand the 'return beat' as a more 'curved' and collective-self-absorbing sensation of rhythm. It should be noted that, although the proposition emphasises the difference between these two models, in practice, all music and rhythm promotes a balance of both sensations. The boundaries between the two rhythmic modes are crossed and re-crossed in the profusion of rich cultural histories expressed in the art of many peoples.

Perceptual genres in different cultures

During the Western Renaissance sequential linear codes, probably underpinned by the alphabetical form, found their expression in almost all aspects of cultural, educational and political life of the bourgeoisie. In the European theatre, for example, the proscenium arch tended to fix roles by created an invisible fourth wall separating the spectator from the performer. From the viewpoint of the spectator, a particular illusion of space was sustained around this 'straight', linear code of perspective. Henri Lefebvre notes:

> *'Tuscan painters architects and theorists developed a representation of space perspective - on the basis of social practice which was itself, as we shall see, the result of a historic change in the relationship between town and country. Common sense meanwhile, though more less reduced to silence, was still preserving virtually intact a representational space, inheritedfrom the Etruscans, which had survived all the centuries of Roman and Christian domination. The vanishing line, the vanishing - point and the meeting of parallel lines 'at infinity' were the determinants of a representation, at once intellectual and visual, which promoted the primacy of the gaze in a kind of 'logic of visualisation'. This representation, which had been in the makingfor centuries, now became enshrined in architectural and urbanistic practice as the code of linear perspective. '*

The code of linear, or 'plane projection perspective' imposed a lasting, and geo-historically specific ideology of power onto the popular conception of space as we perceive it in daily life. This 'embodied' ideology is in sharp contrast with West African traditional 'perspectives', because these are inclined to bring out spatio-temporal sensibilities which are more circular than rectilinear. West African cosmology emphasises non-teleological, organic, and rhythmic forces which emerge from what is believed to be a primordial state of becoming. This is seen as the essential material of all manifestations, both physical and psychological. Wole Soyinka[38] claims that:

> *'Continuity for the Yoruba operates both through the cyclic concept of time and the animist interfusion of all matter and consciousness. '*

He also suggest through his explorations into the nature of Yoruba tragedy, that the principles of illusion, which seeks to represent ideas and inspirations that have been structured, through a structure, are vastly different from the Yoruba principles of tragedy in theatrical expression:

> *'In our journey to the heart of Yoruba tragic art which indeed belongs to the mysteries of Ogun and the choric ecstasy of revellers, we do notfind that the Yoruba, as the Greek did, "builtfor his chorus the scaffolding of afictive chthonic realm and placed thereon fictive nature spirit.... " on which foundation, claims Nietzsche, Greek tragedy developed: in short, the principle of illusion. Yoruba tragedy plunges straight into the 'chthonic realm' the seething cauldron of the dark world will and psyche, the transitional yet inchoate matrix of death and becoming '.*

[38]'The fourth stage'

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The search for protophenomena

In adopting a research method for this inquiry, we have used a phenomenological approach to explore the problem of actions intertwined with their observations. We have attempted to identify particular protophenomena as a way to theorise subjective experiences in what is here described as the 'actative present'[39]. In this case we have assumed that the boundaries of the 'observer' can be identified as the whole group of participants. Such an idea would be seem unremarkable, not to say normal, in many cultures outside the West. However, since the conspicuous demise of communism in the late eighties there has been a strengthening of the myth of the individual as an originary entity. The philosopher Jean-Luc Nancy[40] has felt it necessary to point out that the 'we' must, logically speaking, be the primary and authentic state of being, as opposed to the Cartesian ontology of the autonomous ego. And in attempting to locate temporal, eudemonic differences between the two modes of clapping, we would refer to Jean-Luc Nancy's claimed ontology of 'being-with' as a kind of 'subject-blending-with-observer' to be sought and observed. Another way to put this is to say that because Westernised 'self-other' relationships contain feelings of isolation or estrangement - whether or not the 'other' is singular or collective - we are reframing the idea of observation in a more convivial form.

The Laban system of performative actions

Twenty five young volunteers from a mixture of performative and non-performative backgrounds were invited to participate in a group experiment in which the same rhythmic metre was maintained in each of two consecutive sessions of hand-clapping. In the first, the volunteers were asked to imagine that each hand-clap marked a point along a straight line which extended forward in time. In the second, they were asked to imagine tracing out a flower petal's outline so that each clap produced the inner sensation of following a radial line emanating from the body's centre before returning 'home' for the next. The concepts and practices adopted for the experiment, and the analysis of the perceptions of the volunteers, used a system of performative actions developed by Rudolf Laban[41], the famous choreographer, dance practitioner, and academic.

In Laban's approach, knowledge is derived from, and is understood to be located in, the dancer's active 'centre' of the body. In exploring the way we share the experience of physical movements, rhythm is used as an organisational nucleus for what the group shares in space-time. Evaluation of the participants' perceptions is centred on their

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[39]This refers to the immediate present tense of engaged actions: c.f. Wood, J. B., "Curvatures in space-time-truth", introductory chapter to "The Virtual Embodied; presence | practice | technology", (ed. Wood, J. B.), Routledge, 1997 (at press)

[40]"....henceforth it will have absolutely to rely on a principle other than that of an ontology of the Other and the Same. An ontology of "being-with-each- other" is required, and this ontology must support the spheres of "nature", "history", the "human" and the "non-human" all together; it must be an ontology for the world and for everyone [tout le monde]—if I may say so—, for every-each-one [tout un-chacun], for tbe world "in its totality", and for nothing other than the entire world [tout le monde], since that is all there is (but tbat is, tbus, everything)." from Jean-Luc Nancy's lecture given on 2013196 at the Centre for Theoretical Studies in Humanities and Socia. Sciences University of Essex UK

[41]Rudolph Laban (1879-1958), Hungarian-born choreographer, used to describe a system of dance notation invented by him

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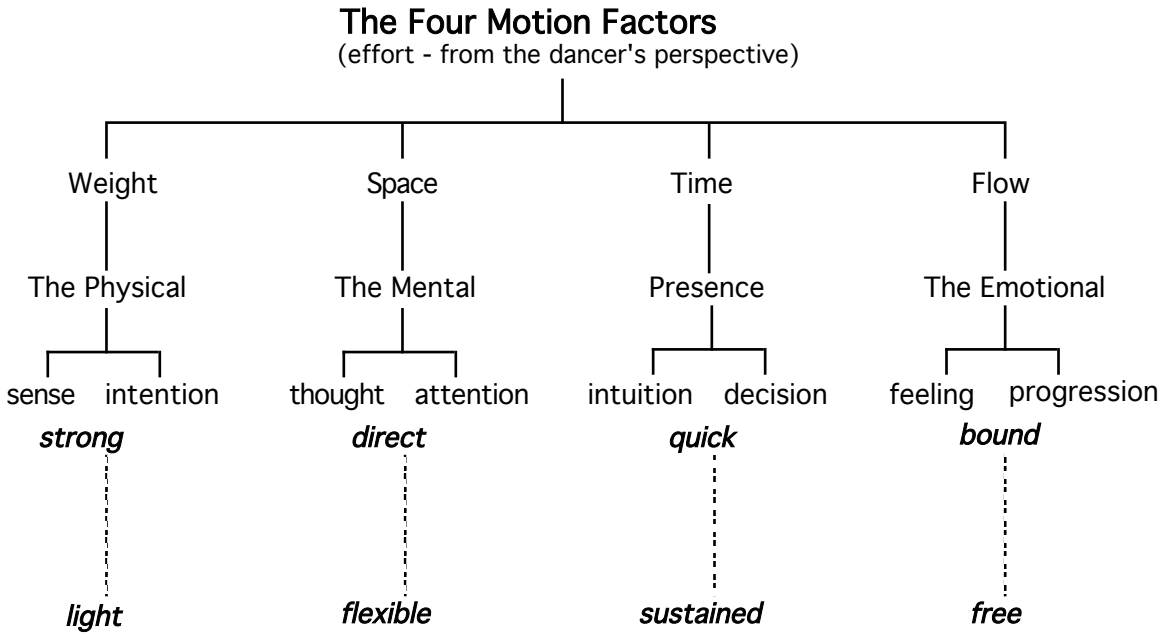
reflected experience of 'effort'[42] which, from the participant's point of view, offers a useful synthesis of intentions and actions. The Laban system enables an analysis of the the performer's experience of 'effort' in a way which reconciles both the action, as seen by another observer, and the experience of performing the action. We evaluated the 'performer-observer's' effort using Laban's four main components: 'weight', 'space', 'time', and 'flow'. By attempting to quantify these embodied attributes of clapping action we feel able to draw conclusions about the qualities of presence elicited by the particular modes of clapping.



Early indications seem to show that most people felt more 'at one' with the rest of the group when clapping in the 'return beat' mode. We had assumed that feelings for a 'collective self' would be equivalent to an individual sense of ease. However, our subjective[43] findings suggest that the few who felt more comfortable with the 'linear beat' were, in any case, temperamentally less gregarious or outgoing than their co-volunteers. The differences indicated by this experiment are complex and difficult to analyse at this stage.

[42]"....tbe inner impu1se - a movement sensation, a thought, a feeling or emotion - from which movement originates; it constitutes the link between mental components of movement" - from Maletic, V., "Phrasing and Effon", text for dance 606, The Ohio University, 1990

[43]some of our conclusions are based on a personal acquaintance with each of the vounteers

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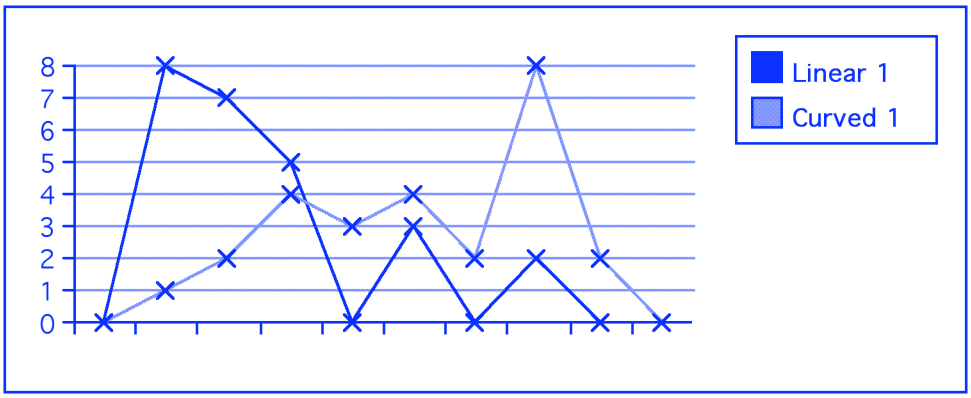
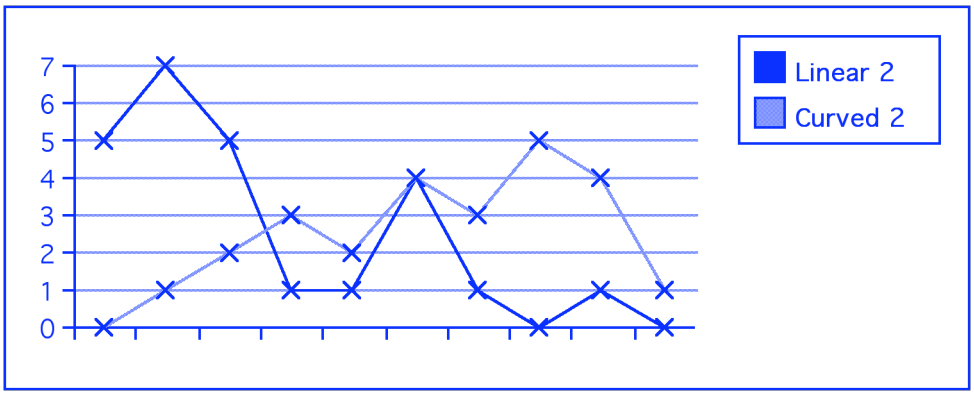
Questionnaire

QUESTION 1 When clapping in rhythm, how **lightly** (i.e. delicate, sensitive) or **strongly** (i.e. forceful or determined) did you find yourself physically exerting 'weight' with each clap?



distribution of answers for 'weight' exertion

QUESTION 2: When clapping in rhythm, how **flexible** (i.e. broad or open) or **direct** (i.e. focused or specific) was your awareness of space?



distribution of answers for focus of spatial awareness

QUESTION 3 When clapping in rhythm, how **quick** (i.e. anticipating the next moment) or **sustained** (i.e. situated in the moment) was your perception of the present moment?

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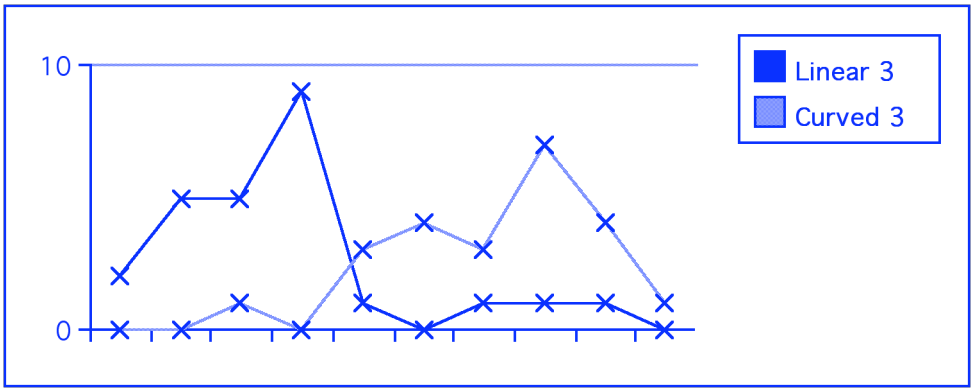
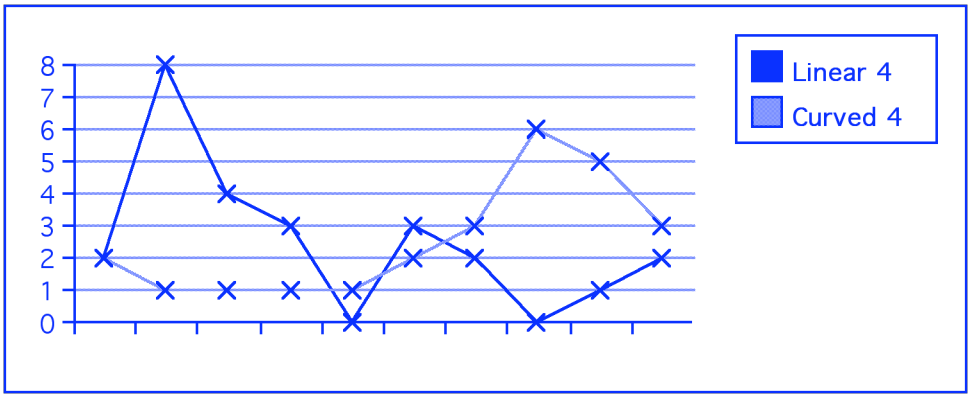


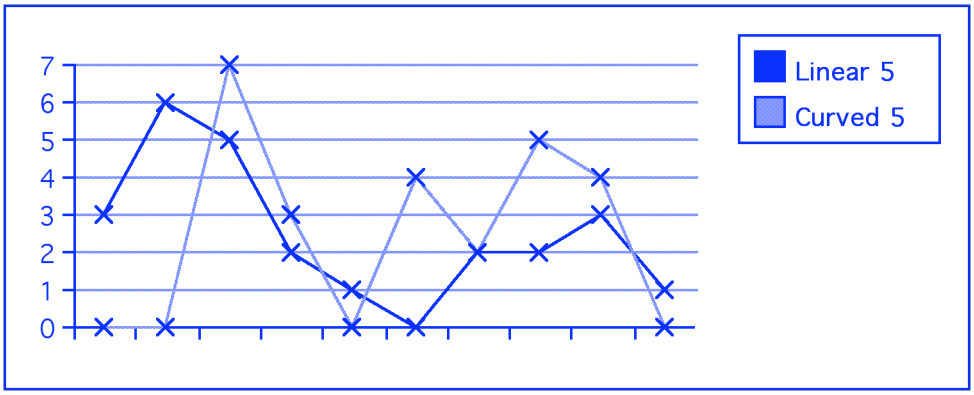
distribution of answers for perceived width of the temporal present

QUESTION 4 When clapping in rhythm, how **free** (i.e. relaxed or released) or **bound** (i.e. contained, inwardly resisting) was your emotional state?



distribution of answers for feeling of freedom

QUESTION 5 When clapping in rhythm, were you aware of the rest of the group as **the collective Other** (i.e. if you felt estranged from the group) or as the **collective Self** (i.e. if you felt at one with the group)?



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distribution of answers for feeling at one with the group