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Interfaces between Physical and Virtual Bodies in Merce Cunningham's *BIPED**

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I. Introduction

There have been contrasting sides of the viewpoint on a dance which is not formed by the corporeal body and its movements. For dance practitioners and scholars, to use technology is an attractive factor to enable the bodily capacity to be extended. On the other hand, it is also conceived as an alarming factor due to the presumption that a physical body would get lost from dance since a virtual body could transcend the spatial limitations of the human body. Francksen-Kelly points out that since digital technology has developed with rapid speed and produced an amount of new systems, an adaptation of technological devices has put choreographers at risk of "los[ing] sight of what [they] are doing or where [they] have come from."[1] By contrast, Marcos Novak announces the future of dance as disembodied experiences, stating that

> Perhaps the most vivid change is coming in the art that is closet to the human body: dance. If dance is the art that is most embodied, dependent intimately on the state of the body··· and each art form is heading for its opposite, the future of dance must be found in disembodiment.[2]

* This paper was extracted from my M.A. dissertation.

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1) K. Francksen-Kelly(2007), The Disembodied Body: the Live, the Virtual and the In-between, *Body, Space and Technology Journal* 6(2), <http://people.brunel.ac.uk/bst/vol0602/home.html, 2008. 7. 9.>.

2) M. Novak(1996), Trans Terra Form: Liquid Architectures and the loss of inscription, Incorporations, <http://www.t0.or.at/~krcf/nlonline/nonMarcos.html, 2008. 8. 1.>.

The development of digital media has led to challenging the way to conceive or perform movements by presenting bodies without bones and organs. These can be referred to as the virtual bodies which are a "new representation of the body."[3] The virtual body does not consist of recording images of real bodies; rather it is created entirely with visualisation of digital data. Due to no physical components, it is called a disembodied body.

A virtual dancing body as a disembodied experience raises several questions: what is a virtual dancing body?; what is its relation with the human body?; for the choreographer, what is the juxtaposition of two kinds of dancers intended for?; and what are its aesthetical impacts upon viewers' perceptions of the performance? In order to resolve the above questions, the paper attempts to explore philosophical and aesthetic implications of a virtual body in the context of a live dance performance.

First, I will set up a theoretical framework to articulate what a virtual body means in performance. For that, I draw upon social and cultural discourses on a virtual body as well as theories of two philosophers Maurice Merleau-Ponty and Gilles Deleuze, both of whom resist a privilege of the mind over the body and a fixed boundary between subject and object and therefore give insights into a relation between the dancing body and virtual technology. Then, I will analyse the work *BIPED*(1999) created by Merce Cunningham, one of the breakthrough choreographers in the dance history of the twentieth century, investigating what the philosophical meaning of a virtual dancing body is and how virtual technologies affect an aesthetic experience of the dance work. The work *BIPED*, which brings virtual dancers on stage and explores the interface between the physical and the virtual, is acclaimed as "a turning point and seminal moment in the development of digital performance"[4] or "the archetypical of digital performance"[5] in the light of the successful intermingling of dance and technology.

II. The Theoretical Framework of the Virtual Dancing Body

1. Social and Cultural Discourses on the Virtual Body

Since the mid-twentieth centuries, the human body has been considered as a complex, debatable, and contentious matter, while body discourses have moved from the marginal position to the dominant in a wide range of disciplines such as cultural theory, feminism, sociology, and philosophy. Furthermore, the concept of the body has become more problematic since the advent of the virtual body in digital culture where "the body is transformed, composited or telematically transmitted."[6]

3) S. Dixon(2007), *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*(Cambridge: MIT Press), p.212.
4) Ibid., p.190.
5) Ibid., p.192.

According to Shilling, an internationally well-known scholar of body studies from the perspective of sociology and cultural studies, technology has exerted considerable influence on changing "the formation of social relationship"and "the (very) structure of society"[7]as Karl Marx says "the hand mill will give you a society with the feudal lord, the steam mill a society with the industrial capitalist."[8] In contemporary society, an entire human life, including work and leisure time, is occupied with the employment of technology. Further, its invasion upon the human body, such as prostheses, challenges the "conventional notion of what it is to be and to have a body" in terms of the "the spatial and functional arrangements of the organic properties of our bodies."[9] Thacker illustrates the current intimate relation between body and technology as the below.

> While distinct terms, body and technology will always necessitate their interdependent consideration as a relationship. Likewise it becomes increasingly difficult to talk about bodies and technologies as separate entities.[10]

In conjunction with the closeness to technology, one of the most significant phenomena to transform the way to constitute social relationships is the radical expansion of cyberspace.[11] As a comprehensive term, cyberspace implies the disembodied environment where people can interact and communicate without physical copresences, and share information through computers or electric mediums.

McLuhan and Watson point out that with the burgeoning of digital technologies, human life is no longer limited to visceral and physical experiences, since it also contains disembodied and virtual experiences.[12] Self identities, collective relationships, and community norms are reconstructed within digital environments, which can be disparate from the existing formations in physical environments. It means that Internet culture makes the gap "between emotional and bodily intimacy"[13] and creates "body-less selves."[14]

When people turn on the computer, the human selves are detached from the place where the body is situated in. What happens in cyberspace is that physical bodies are dematerialised and virtual selves

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6) Ibid., p.212.
7) C. Shilling(2004), *Body in Culture, Technology and Society(*London: SAGE Publication), p.173.
8) K. Marx and F. Engels(1976), *Collected Works. Volume 6*(Moscow: Progress Publishers), p.166.
9) C. Shilling(2004), p.173.
10) E. Thacker, cited in I. Richardson and C. Harper(2001), Corporeal Virtuality: The Impossibility of a Fleshless Ontology. *Body, Space and Technology Journal* 2(2), <http://people.brunel.ac.uk/bst/vol0202/index.html, 2008. 6. 27.>.
11) C. Shilling(2004), p.173.
12) M. McLuhan and W. Watson(1995), *From Cliché to Archetype*(New York: Basic Books), p.379.
13) S. Dixon(2007), p.478.
14) J. Stratton(1997), Not Really Desiring Bodies: The Rise and Rise of Email Affairs, *Media International Australia* 84(1), p.37.

occur through keyboards, screens, wires, and computers. In digital culture, the corporeal presence can get lost, and the virtual body in digital space might replace the physical body in the real world. However, it is a very debatable and provocative presumption that in cyberspace, human identity or the self can exist without the actual body but with the virtual body, since it implies that the human physical body is not involved in human consciousness. The notion of the body which is separated from the consciousness or the mind is settled by a classic Cartesian split of mind and body.

It is generally believed that the mind/body division has prevailed in Western culture and society and has been firmly established in the book, *The Discourse on Method*(1637) written by René Descartes. In Cartesian epistemological understanding, the self is located and formed only in the mind, while the body functions as the container of the self. The body as "a stabilizing anchor, a place of containment" brings the spatial and temporal limitation to the self and mind.[15] That is, the mind is distinguished and separate from the body, and the body is objectified and marginalised in the Cartesian model of subjectivity dominated by the mind. This mind/body split has been subverted by phenomenologists who attempted to oppose the vague acceptance of an unobservable world in metaphysics and theology, and insisted on the holistic existence of mind and body. Nevertheless, the Cartesian dualism has still penetrated popular culture and academic realms, as the following cyber-theories and cyberpunk novel, William Gibson's *Neuromancer*(1984), proves.

The negation of corporeality and the stress on disembodiment in virtual reality and cyberspace have been claimed by several scholars. Woolley regards cyberspace as "just an open world where your mind is the only limitation."[16] Moreover, Heim argues that "in cyberspace minds are connected to minds, existing in perfect concord without the limitations or necessities of the physical body."[17] The novels of Gibson are often associated with the description of cyberspace. In Gibson's debut novel *Neuromancer*, which is known as a precursor of the science fiction subgenre cyberpunk, humans exist as disembodied computer operators by leaving the corporeal body behind, and replacing its lived space with pure data space through computers. Cyberspace consists of disembodied consciousness and pure information without the existence of the corporeal body. In other words, Gibson's science fiction represents the possibility of disembodiment in a virtual world. Allucquere Rosanne Stone explains how cyber-theorists reflect the hierarchical framework of Cartesian dualism, saying that

> Where, in modern thinking, the body served to contain and limit the self, the singularity of which was guaranteed by the continuity of the mind in the body, there is now an increasing acceptance of the idea that not only are selves separate from the body, they are not limited and determined by the mind's containment in the body.[18]

15) I. Richardson and C. Harper(2001).
16) B. Woolley(1992), *Virtual World: a Journey in Hype and Hyperreality*(Oxford: Blackwell), p.14.
17) M. Heim(1993), *The Metaphysics of Virtual Reality*(New York: Oxford University Press), p.34.

As Stone mentioned above, although cyber-enthusiasts accept the Cartesian split model of subjectivity, "the logic of a disembodied post-corporeality"[19] in cyber-theory differs from that in Cartesian metaphysics. Cartesianism irresistibly acknowledges the necessity of the body, since human mind or self is contained in the body, so the body is considered as necessary although threatened. By contrast, cyber-theorists believe that the body is no longer significant for humans because digital technology make it possible that the mind can be formed without the container. The possibility of disembodied subjectivity underlies "the final non-necessity of the body."[20] Stone characterises this argument of the cyber-theory as "a radicalising of Cartesian Dualism."[21]

Advocates for the recent cyber-theory explain that technologies help to eliminate the discrimination of race, class, and gender because online users create their identity regardless of their embodiment. Stone counters "forgetting about the body"while defining this as "an old Cartesian trick."[22] For her, it is questionable whose desires are operated and represented in a virtual system, and consequently, forgetting bodies can not change existing positions of women and minorities because it results in the exclusion of women's and minorities' speeches in hierarchical cyberspace. Against the absence of corporeality in the cyber-theories, she emphasises that virtual communities "originate in and must return to, the physical. No refigured virtual body, no matter how beautiful, will slow the death of a cyberpunk with AIDS. Even in the age of the technosocial subject, life is lived through bodies."[23] Nevertheless, her argument is also criticised for her intention of the inevitable return to the physical which retains the assumption of the Cartesian mind/body dualism.

This paper objects to the understanding of the virtual dancing body which adopts the mind/body dualism. There is an obviously incompatible matter between the Cartesian cyber-theory and dance theory. Dance is generally regarded as "the art that intentionally isolates and reveals the aesthetic qualities of the human body-of-action and its vital life."[24] Moreover, dance scholars insist that the human body connotes "corporeal intelligence"or "thinking body"[25] rather than purely being viewed as a passive container for delivering a choreographer's thought. The dancing body stands against the privileging notion of the mind over the body. Dancers perceive their own dancing bodies as a holistic

18) A. R. Stone(1995), Identity in Oshkosh, *Posthuman Bodies*, J. Halberstam and I. Livingstone(eds.) (Bloomington: Indiana University Press), p.34.
19) I. Richardson and C. Harper(2001).
20) Ibid.
21) A. R. Stone(1995), p.34.
22) A. R. Stone(1991), Will the Real Body Please Stand Up? Boundary Stories about Virtual Cultures, *Cyberspace: First Steps*, M. Benedikt(ed.)(Cambridge: MIT Press), p.113.
23) Ibid., p.111.
24) S. H. Fraleigh(1987), *Dance and the lived body: a descriptive aesthetics*(Pittsburgh: University of Pittsburgh Press), p.xiii.
25) A. Grau(1995), On the Notion of Bodily Intelligence: Cognition, Corporeality and Dance, *Border Tensions: Dance and Discourse*, C. Jones and J. Lansdale(eds.)(Guildford: University of Surrey), p.643.

unity of mind and body. In this respect, the involvement of a dancing body in virtual technologies cannot be understood from the perspective of the Cartesian dualist ontology. Therefore, this paper will draw upon two body discourses in philosophy: Maurice Merleau-Ponty's notion of the body and Gilles Deleuze's concept of the body without organs. These philosophical understandings of embodiment and technology will contribute to define what the virtual images mean in BIPED and examine how the relation between the physical and the virtual is formed.

2. "Corporeal Virtuality"

The "corporeal turn" which has significant influence on contemporary cultural and academic realms.[26] The recent stress on the body has been ascribed to the work of Merleau-Ponty, who considers embodiment as essential to being and knowing in the world. In this article, the notion of the body-subject of Merleau-Ponty will be investigated, centring on *Phenomenology of Perception*(1962), an essential book to explore the relation between perception, consciousness, and the world. Merleau-Ponty contests the epistemic system consisting of two opponents, the mind and the body, the subjective and the objective, because he believes that the body is not separated from human self and consciousness. For him, the body is the essential condition and context in which humans perceive things. This perception is the fundamental way to connect self and world and is inseparable from its corporeality. In other words, being self and having a world is achieved through embodied experiences.

Furthermore, Merleau-Ponty's argument that "to be body is to be tied to a certain world"[27] implies not only the negation of the objective position of embodiment, but also the removal of the subject/object dualism. His emphasis on corporeal experience does not result in the returning to the priority of one binary term over another. Instead, he articulates relationships between subject and object, inside and outside, and the biological and the physical. The Cartesian dualism eliminates how the two incompatible terms are alien, while Merleau-Ponty gives an account of the entre-deux or the "in-between two" which calls the expelled field of polarised substances into activity.[28]

To explain what happens in the middle space, he draws upon the consciousness of lived experience. Humans observe other objects and have inter-relationship with them. On the contrary, the human body or consciousness is not seen as an "objectifiable thing in itself"[29] because "I [human] am not in front

26) H. Ruthrof(1997), *Semantics and the Body: Meaning from Frege to the Postmodern*(Toronto: University of Toronto Press), p.vii.
27) M. Merleau-Ponty(1962), *Phenomenology of Perception*, C. Smith trans.(London and New York: Routledge and Kegan Paul Ltd.), p.148.
28) C. Vasseleuf(1998), *Textures of Light: Vision and Touch in Irigaray, Levinas and Merleau-Ponty*(London: Routeldge), p.22.
29) I. Richardson and C. Harpers(2001).

of my body, I am in it, rather I am it."[30] For him, the body is not a fixed object, but it has the potential to link self to world. All parts of the body are linked together by being "enveloped in each other" rather then "spread out side by side."[31] "My whole body for me is not an assemblage of organs juxtaposed in space. I am in undivided possession of it and I know where each of my limbs is through a 'body image' in which all are included."[32] This is the concept of the corporeal schema or body-image. The body has "synergistic structure between the organs"[33] and its synergistic form has an automatic, responsive, and anticipatory mobilisation in relation to certain objects and objective space.

According to Merleau-Ponty, "our body, as the potentiality of this or that part of the world, surges towards objects to be grasped and perceives them··· he is his body and his body is the potentiality of a certain world."[34] The corporeal schema or body-image provides not only the illustration of the interplay between the subjective and the objective, but it also presents the possibility of integrating external objects with corporeal experience.[35] The ambiguity and flexibility of the body, shown in the corporeal schema, gives a significant meaning to the incorporation of technology into the body, in that the natures of the corporeal schema subvert a strictly divided relation between technology as an outer object and the body as an inner subject, suggesting that external objects can be part of the corporeal perceptions. That is, the human perception of the world can be extensible though technological instruments. For example, the stick was just an external object before the blind man got used to being with it. The stick participates in his bodily perception with the world he reaches, and is no longer perceived as the object itself. In other words, the stick is incorporated into his own body and consciousness, and vice versa.

Merleau-Ponty indicates that "habit expresses our power of dilating our being in the world, or changing our existence by appropriating fresh instruments."[36] The human body is phenomenal rather than objective, since the body is not limited within the boundary of skins. Rather, it can be flexibly adapted and intertwined with the world. In this respect, tools are not just to help human perceptual experience, but to involve itself in being self and having a world. Likewise, cyberspace can be conceived of as part of corporeally perceptual experiences from Merleau-Ponty's phenomenal body, in opposition to the disembodied agency from the Cartesian cyber-theory. The latter's perspective believes that cyberspace produces "total sensory immersion"[37] similar to lived experience, so the

30) M. Merleau-Ponty(1962), p.150.
31) Ibid., p.98.
32) Ibid., p.98.
33) R. Bernet(1993), The Subject in Nature: Reflections on Merleau-Ponty's Phenomenology of Perception, *Merleau-Ponty in Contemporary Perspectives*, P. Burkes and J. Van Der Veken(eds.)(Dordrecht: Kluwer Academic Publishers), p.59.
34) M. Merleau-Ponty(1962), p.106.
35) E. Grosz(1995), *Space, Time and Perversion: The Politics of Bodies*(Sydney: Allen and Unwin).
36) M. Merleau-Ponty(1962), pp.143-146.
37) M. Featherstone and R. Burrows(1995), Cultures of Technological Embodiment. An Introduction,

body is left behind within cyberspace, because its limited location for sensory experience is no longer necessary.

For Merleau-Ponty, however, the body is a fundamental condition for the process of perception and the production of knowledge, even in a virtual world. As Vasseleu indicates, the conceptualisation of virtual reality is headed for an illusion of disembodied consciousness, but this illusion is already associated with the body.[38] "There is no world without things or bodies" since all information and techniques are generated through bodies.[39] Virtual space "remains conceivable only insofar as corporeality provides the basis for our perception and representation of it,"[40] being not detached from embodied experience. For instance, in many ways the techniques of cyberspace are recipients of corporeal perception "from determining the precise configurations of a VR interface to influencing the speed with which we can read a CRT screen."[41]

Embodiment has a formative role in the construction of cyberspace, and simultaneously, cyberspace becomes a medium of embodied experiences for having a world. Humans physically perceive immaterial objects through virtual space as another context which affects being self-consciousness along with real space. In other words, virtual technologies are shifted from objects to part of corporeal activities, which Richardson and Harpers described as "corporeal virtuality."[42]

According to Vasseleu, in Merleau-Ponty's sense, cyberspace is not a neutral electronic interface or a pure informative environment, but it is "a medium of participatory orientation" between material bodies and immaterial objects which exist in different space.[43] The concept of a fictional or symbolic mapping of the corporeal schema helps us to understand this definition of cyberspace. Human experiences are constituted not by objects, but rather by "expectations and meanings" of objects which are generated by interaction between corporeality and objects.[44] Therefore, immaterial objects of cyberspace can not justify non-presence of corporeality within it. Whether embodied or not, perceiving objects are "the highly specific thing toward which we project ourselves."[45] From a Merleau-Pontian perspective, virtual technology intervenes between corporeal subject and incorporeal object, and provides a different kind of embodied experience; a virtual body as an immaterial object is perceived and formed through embodiment.

Cyberspace/Cyberbodies/Cyberpunk: Cultures of Technological Embodiment, M. Featherstone and R. Burrows(eds.)(London: SAGE Publications), p.3.

38) C. Vasseleu(1998).

39) R. Bernet(1993), p.65.

40) E. Grosz(1995), p.84.

41) N. K. Hayles(1996), Embodied Virtuality: or How to Put Bodies Back into the Picture, *Immersed in Technology: Art and Virtual Environments*, M. A. Moser(ed.)(Cambridge: MIT Press), p.1.

42) I. Richardson and C. Harpers(2001).

43) C. Vasseleu(1994), Virtual Bodies/Virtual Worlds, *AFS* 19, p.155.

44) E. Grosz(1994), *Volatile Bodies: Towards a Corporeal Feminism*(Sydney: Allen & Unwin), p.89

45) M. Merleau-Ponty(1962), p.139.

3. “Body without Organs”

Deleuze and Guattari’s “Body without Organs” is the other theoretical concept which is conductive to examining the role of virtual technology and the presence of the virtual body in dance performances. Gilles Deleuze(1925-95) is a French poststructualist philosopher who rejects a determined nature of subject and emphasises difference as a fundamental feature for the process of becoming. This paper will introduce the notion of the “Body without Organs’, which is one of key ideas in Deleuze’s significant and well- known text, *Capitalism and Schizophrenia*(1980), co-written with Félix Guattari. Their unorthodox concept of the body suggests the capacity to rupture the cohesive connection between a dancing subject and a body, as well as to multiply the identity through the process of becoming others in connection with the potential of digital technology.

The “Body without Organs”(or BwO) is considered as one of Deleuze's essential ideas. In his book, *The Logic of Sense*(1969), Deleuze introduces the term the Body without Organs, which was coined by a French playwriter, Antonin Artaud. In his collaborative works with Guattari, particularly, *Anti-Oedipus*(1972) and *A Thousand Plateaus*, which are two volumes of *Capitalism and Schizophrenia*, the concept of the BwO has been developed and articulated, but different views of the BwO are held between both the books. As Thanem argues, in *Anti-Oedipus*, the BwO is described “as a non-productive entity”since it is in a state of “suspended animation” so completely de-organised.[46] On the contrary, *A Thousand Plateaus* explains that it generates and distributes flows and desires, as “a force productive in its own right.”[47] This paper will look into the latter book, and its definition of the BwO as a means to interpret the dance work.

Deleuze and Guattari argue that the present moment consists of two dimensions, the actual and the virtual which is the inherent potential of the moment. Different to the actual matter of the human body as a biological organism, the BwO is the virtual matter of the human body as a field of potentials which actualise something or someone. That is, the BwO is not a body which contains fixed organ systems or is subordinated by the mind, but it is a dynamic state of flows, intensities, and transient particles. They state that

> This body without organ is permeated by unformed, unstable matters, by flows in all directions, by free intensities or nomadic singularities, by mad or transitory particles.[48]

Everything in the earth is made up of flows and intensities: not only water, air, mountain, and glass,

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46) T. Thanem(2004), The Body Without Organs: Nonorganizational Desire in Organizational Life, *Culture and Organization* 10(3), p.209.

47) Ibid., p.209.

48) G. Deleuze, G. and F. Guattari(1987), *Thousand Plateaus: Capitalism and Schizophrenia*, B. Massumi trans.(Minneapolis: University of Minnesota Press), p.40.

but also ideas, people, and language are all continually moving, although they look to be stable substances. The BwO lacks the hierarchical and systemic organisation of the organs and instead, constitutes continuous and various moving of intensities. The BwO only produces and distributes intensities which pass and circulate, and it is "occupied" only by them.[49] Yet, it is not an offered location where something is situated, as they describe that

> [The BwO] is not space, nor is it in space; it is matter that occupies space to a given degree — to the degree corresponding to intensities produced. It is nonstratified, unformed, intense matter, the matrix of intensity, intensity.[50]

In an extended sense, Deleuze and Guattari characterise the BwO as "a plane of consistency"or "a plane of immanence" where stable formations, real structures, and transcendental subjects are extracted, and only the shifting relations between unsettled and subjectless elements occur.[51] The plane of consistency is referred to as "the potential totality of all BwOs."[52]

Here, it is important to note that literal meaning of the BwO which replaces organs with intensities; it does not imply the denial of organs. Deleuze and Guattari emphasise that the BwO is not an empty body in which the organs are taken apart, but a body which is constantly dismantling the organism, particularly, the hierarchial dimensions of the organisation. In other words, "the BwO is not opposed to the organs; rather, the BwO and its 'true organs', which must be composed and positioned, are opposed to the organism, the organic organisation of the organs."[53] For them, the organism is involved in "stratification', which is opposite to the earth or the BwO. Stratification is a phenomenon of arresting intensities, stopping nomadic singularities, and organising them. Its operations of "accumulation, coagulation, and sedimentation"[54] through which strata or layers are coded and territorialized, then act to produce dominant structures, functions, and organisations.

> The strata are judgments of God, stratification in general is the entire system of the judgement of God. (but the earth, or the body without organs, constantly eludes that judgment, flees and becomes destratified, decoded, deterritorialized)[55]

A surface of stratification is the state where two sides encounter and interconnect with each other. One side faces a stratum which makes the BwO an organism, a signification, and a subject.

49) Ibid., p.153.
50) Ibid., p.153.
51) Ibid., p.266.
52) Ibid., p.157.
53) Ibid., p.158.
54) Ibid., p.159.
55) Ibid., p.40.

Simultaneously, the other side faces the BwO or the plane of consistency which disarticulates organisms and opens them up to experimentation and desubjectification. On the surface of stratification, there is a constant conflict between the BwO and the strata, but it does not mean that they are isolated from each other, because "the BwO is always swinging between the surfaces that stratify it and the plane that sets it free."[56] According to Ansell-Pearson, Deleuze and Guattari do not describe the BwO and the organism as polar opposites since, for them, both the processes are interconnected and "involve a play between nonorganic and stratified life"[57] Therefore, a surface of stratification is called "a machinic assemblage"[58] in terms of the dynamic interface between distinct components or particular singularities.

Deleuze and Guattari underline that dismantling organisms, or coming to be the BwO, was not attributed to "killing yourself," but rather it is ascribed to not still staying on the strata, and to "opening the body" to connections of assemblages, conjunctions of flows, and continuums of intensities.[59] To "make yourself a body without organs"[60] is accomplished by a dynamic exercise or experiment in conjunction with other bodies(without organs) which Deleuze and Guattari name as "becoming." They insist that the BwO is not a pre-existing or finished concept, but an endless practice for actualising the virtual. The experiment attempts to repel the strata, and transforms a self body into an assemblage where desires are aimed at difference and the self identity is continually reconfigured. This process of becoming has no end, as Deleuze and Guattari highlight that "you can't reach it(BwO), you are forever attaining it, it is a limit."[61]

As a machinic assemblage in which the BwO and the strata continually interface, the body is a being in becoming others, through the experience with other assemblages or other bodies without organs. The self can not be signified and interpreted as having a steady identity since it is in the process of becoming. In addition, its nature is changing through its relations with others or the outside. Thus, the self exists not with a fixed identity, but rather with multiplicities into which other things are inserted and metamorphosed. In this context, "A [body] exists only through the outside and on the outside. A [body] itself is a little machine."[62]

Deleuze and Guattari's notion of the body provides an unorthodox understanding of the relation between the body and technology, raising a question about the influence of technology on the creation of the BwO, or the process of becoming. As Kozel indicates, the BwO shows that technologies are not

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56) Ibid., p.161.
57) K. Ansell-Pearson(1999), *Germinal Life: The Difference and Repetition of Deleuze*(London: Routledge), p.154.
58) G. Deleuze and F. Gauttari(1987), p.40.
59) Ibid., p.160.
60) Ibid., p.149.
61) Ibid., p.149.
62) Ibid., p.4.

external objects to bodies, because both are not binary opposites.[63] In a conventional sense, technology is conceived as an abstract and logical and mechanical system, while the human bodies are viewed as an organic and biological system. These fixed positions are expanded by the concept of the BwO in which both technology and bodies consist of intensities, flows, and speed. As machinic assemblages, they are no longer contrary, but collaborative through connections, conjunctions, and metamorphoses.

The incorporation of technology helps to create the self in a virtual dimension or as "an alternative identity that resist[s] the violence of an imposed one."[64] As a way to form a multiplicity, technological experiments stimulate to deterritorialise existing hierarchical and signified systems, to connect bodies with outside multiplicities of technology, and to multiply the self. Choreographer Carol Brown elucidates the interface between the body and technology in the following statement.

> Working with emergent technologies which enable a play between the real and the virtual through an integrated circuit of bodies and technologies potentially fosters a negotiation and an encounter between dimensions.[65]

Then, it is significant to acknowledge that a created or reformed assemblage as one dimension of a multiple body is associated with the previous unit or assemblage. Different dimensions of a multiplicity coexist. Technological aids used in becoming others, mean to neither kill organs in the body, nor substitute the human body with machines.[66] Rather, a virtual body technologically manipulated is one kind of metamorphoses spawned by its own multiple body's "potential for increasing the number of connections." The two different dimensions are allied identities, while not demanded to unite in signifying a self, because the self is "in between two multiplicities."[67]

The above theories of the philosophers have different viewpoints of the human body. Merleau-Ponty emphasises the corporeal body which is an essential condition for the construction of self identity and consciousness. For him, through embodied experiences, the human can perceive objects and gain knowledge. On the other hand, Deleuze and Guattari define the body not as an organic system, but as a machinic assemblage which is made up of intensities and flows constantly moving in an endless process of becoming. As a mass of potential, the Body without Organs is a fluid

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63) S. Kozel(1995), The Virtual World: New Frontiers for Dance and Philosophy, *Border Tensions: Dance and Discourse*, C. Jones and J. Lansdale(eds.)(Guildford: University of Surrey), p.223.

64) C. Brown(2006), Learning to Dance with Angelfish: Choreographic Encounters Between Virtuality and Reality, *Performance and Technology: Practices of Virtual Embodiment and Interactivity*, S. Broadhurst and J. Machon(eds.)(Hampshire: Palgrave), p.96.

65) Ibid., p.96.

66) F. Schroeder(2005), The Deleuze-ian/Guattarian Performance: Performancing at N-1 Dimensions, *Body, Space and Technology Journal* 5, <http://people.brunel.ac.uk/bst/vol05/index.html, 2008. 7. 22>.

67) Ibid.

and unstable state which enables the self to become others. However, their notion of the body without organs denies hierarchical organisations of the organs, rather than corporeal organs.

Even though the Merleau-Ponty's perspectives on the body are different from Deleuze and Guattari's, both the discourses oppose the Cartesian dualism based cyber-theories which insist upon the exclusion of corporeality and replacement of the human body by virtual technology. In Merleau-Ponty's sense, virtual technology is a medium to operate on bodily perceptions, and a virtual body is a disembodied object which is mediated and generated through corporeal virtuality. Moreover, In Deleuze and Guattari's sense, technology prompts the self to actualise its own virtual dimensions. An existing material and invented immaterial body coexist as the metamorphoses of a multiplied self. In the following chapter, these philosophical contexts of the human body and its interface with technology will form the groundwork for the theorisation of the advent of the virtual images in a dance practice, along with the physical movements.

III. Dance and Virtual Technology

1. Merce Cunningham's *BIPED*

BIPED is a choreographic work for real and virtual dancers for the live performance, collaborated on by Cunningham with two media artists Shelly Eshkar and Paul Kaiser. The movements of Cunningham's dancers are digitally mediated and metamorphose into virtual images. The human dancers standing on the floor perform with virtual images projected on the scrim, but they are not always shown together. The animated bodies appear and disappear at various times, transforming into a variety of patterns and shapes, including humanoid figures, scattering straight lines, and moving dots.

The term "biped" for Cunningham's choreography has two significances. It reflects his long-lasting interest which is to bring a light on "all that a body on two legs can do."[68] Moreover, "Biped" has also been the working title for digital software, which is engaged in the creation of the virtual body in Cunningham's piece. To make the virtual images in *BIPED* demands the complex process and various systems such as motion capture, Biped, and 3D Studio Max. At the beginning of the process, two of Cunningham's dancers performed a series of short movement sequences, attaching optical sensors to joints and other parts of their bodies.[69] The cameras recorded their three dimensional motions and transmitted the data to a virtual 3D space of a computer. The data are filtered and manipulated by

68) P. Kaiser, quoted in S. Broadhurst(2007), *Digital Practice: Aesthetic and Neuroesthetic Approaches to Performance and Technology*(Hampshire: Palgrave), p.83.

69) J. Abouaf(1999), Biped: A Dance with Virtual and Company Dancers, Part 1, *IEEE MultiMedia* 6(3), pp.4-7.

Biped in order to generate the virtual skeletons. Moreover, Kaiser and Eshkar imbue the skeletons with their creative hand drawn figures. The physical movements are transformed into the virtual movements which sustain the human kinetic effects, and capture the artistic expressions of Kaiser and Eshkar.

The virtual dancing figures appearing in *BIPED* are generated by computers, consisting of digital data. However, "the movements of this dance were to be as true to life as possible"[70] even though digital software processes permit them to freely manipulate the movements. The programme Biped conforms to the anatomical structures of the human physical body, and the irresistible force of the real world so as to appear lifelike. That is, the virtual bodies in *BIPED* do not entirely ignore the kinetic features of the human performers, but rather adopt them.

Corresponding to the appearances and disappearances of the virtual images on the scrim, fourteen human dancers often enter and exit on stage, but at different times from the virtual dancers. Due to a blurred boundary of an entrance or exit in the backdrop, the figures of the dancers look to be swallowed up in the darkness. Cunningham describes the entrance scene through the back as "coming out of space, out of fog: the shape isn't discernible till it appears," and the exit scene toward the back as "disappear[ing] into thin air."[71] The piece has complex and, at some points, canonical compositions of solo, duet, and unison works. Throughout the performance, dancers constantly move at various speeds and rhythms that sometimes clash with those of the projected movements. For instance, in the middle part, a couple of dancers face each other and mirror their counterpart's motions. Another three dancers emerge on the boundary of the backdrop and stand posed as firm as statues. The music suddenly ceases at the moment when a slow motion of the obscure figure of a virtual dancer emerges, whereas the two dancers keep moving. The contrast speeds and dynamics between the real and the virtual movement give a new sense of time to audiences.

There are similar patterns and sequences of movements including holding one leg in the air, raising arms, turning a sort of pirouette, doing a series of short jumps, and the repetition of these places emphasis on the tensions and strengths of physical muscles. In the latter part of the piece, acceding to Cunningham's request for "something different," costume designer Suzanne Gallo adds transparent outfits, which male dancers slip onto the female dancers whilst wearing the same transparent outfits themselves.[72] During the scene, a female dancer is often lifted off the ground in a horizontal position by several male dancers. It is paralleled in the vertical lines on the front screen and backdrop. The other striking pattern is to highlight continuous running and jumping with flapping outfits, as if they

70) Ibid., p.7.
71) M. Cunningham(2000), *Merce Cunningham Focus Day*, Interviewed by A, Macaulay(London: Barbican Centre).
72) D. Reynolds(2000), Displacing 'Humans': Merce Cunningham's Crowds, *Body, Space, & Technology* 1(1), <http://people.brunel.ac.uk/bst/1no1/DEEreynolds.htm, 2008. 9. 1.>.

tried to fly in the air. A few minutes before the end of the performance, all the dancers enter on the stage. They take a sculptural posture one by one, but still moving slowly, as the curtain falls.

In contrast to fixed figures of the human biological body, an animated body has more capacity for transforming its shape, ranging "from the human to the abstract, and from tiny points of light to looming twenty-foot figures that seem to step over the heads of the live dancers."[73] In *BIPED*, Kaiser and Eshkar attempt more diverse figures of a virtual body beyond hand drawings of 2-D and 3-D animations. They utilise sensor dots of the motion-capture process, which are the initial figures of the data collected from the human movements. These moving dots, removing a visible figure of the human body, are varied and multiplied, as De Spain defines these as "a new kind of humanoid skeleton, an electronic glyph indicating bodiless points of articulation."[74] For instance, various sizes of dots make vertical lines moving sidewards, or become spiders, which are suggestive of a bodily figure filmed by an overhead camera. Another manifestation of the projected image is dispersion of straight lines. When they scatter on the scrim, it seems to be just abstract images. However, as soon as the lines reassemble and make a humanoid figure, audiences become aware of that they evoke skin parts of the original body, since from the created shape "one can still feel original mass and weight."[75]

Projected images involve not only the varied figures derived from the human movements, but also vertical and horizontal bars of light which flow at different speeds. Lines irregularly come out and vanish on the scrim in changing colours, widths, and lengths. They are divided into twin lines, or joined to another line, and sometimes, a virtual dancer appears from one bar and disappears behind the other. The order of the projected animations is determined by chance procedure, which is one of Cunningham's time-honoured traditions. Cunningham rolled the dice in order to organise the order of a given twenty-five files of projections. Kaiser indicates that chance operation provides an autonomous relation between technology and dance and its unpredictable effects, illustrating the scene in which "one of the first dancers on stage was haloed in a projection of her own motion capture, as if I were dancing inside myself, she said afterwards."[76]

In the above scene, the real and the virtual space are intersected, and audiences can perceive both. However, even though the real dancers often perform on the stage without the projected animations, the audiences perceive the immaterial trace of the virtual images. For Kaiser, "the dance is successful if your perception of the dance has been affected by the projections, even when they aren't present on the screen."[77] "Interpenetration of real and virtual spaces"[78] or "intersection between two"[79] is

73) K. De Spain(2000), Dance and Technology: A Pas de Deux for Post-humans, *Dance Research Journal* 32(1), p.13.
74) Ibid., p.13.
75) P. Kaiser(2000b), *New Bodies, New Realities: Live Chat Room, 15 October*(London: Institute of Contemporary Arts).
76) P. Kaiser, quoted in S. Broadhurst(2007), p.83.
77) P. Kaiser(2000a), Summer Dance: Merce Cunningham, Interviewed by C. Atlas and S. Schwartz, 26 August (BBC2 television).

considered as the essence of *BIPED*, as well as a reason for considerable acclamation.

This dance work presents the possibility of virtual dancers who can keep away from the force of the real world, as well as the representational form of the human body. It is carefully suggested that the virtual space and creature can embody movements which deliver an artistic meaning and value, as some dance scholars announce the future of a dance practice. De Spain insists that "we must begin to acknowledge that we might have to engage with 'dance' as a phenomenon distinct from the human performer."[80] In addition, Rubidge defines digital dance as a work which "often involves the presence of dancers, either as digitised images or live."[81]

2. The Virtual Body as a Re-embodied and Multiplied Self

Both the theories of Merleau-Ponty and Deleuze and Guattari imply that the virtual body does not lead to the lack of necessity of embodiment. From Merleau-Pontian point of view, the virtual world is another context for corporeally perceiving immaterial objects, rather than for escaping from embodied experiences. Deleuze and Guattari assert that since, as a continuously shifting state, the body multiplies its own identity with an activity of "becoming." For them, the body is considered as a machinic assemblage that morphs the self in conjunction with others. In this sense, digital technology can be considered as a means to dismantle a stratum or a conventional system and to create a new dimension of the multiple self, by opening the body to the interface of the potential of digital technology as an outside multiplicity. The above notions of the virtual presence are paralleled with the choreographer's attitudes to using virtual technology, as well as his artistic intentions of creating the virtual bodies in the live performance.

According to Kaiser, he and Cunningham did not intend to present the digitally mediated bodies which can overcome the physical capacity of the human body; rather, they sought to create the digitalised images which retain the kinetic qualitative aspect of the human dancer.[82] At the same time, Cunningham adopted an attractive feature of virtuality which is "visually marvellously interesting − the skeleton of the movement but not the fill-out."[83] The virtual projections of BIPED have unique movements which are digitally manipulated and sketchily drawn, and which also preserve the idiosyncratic qualities and dynamics of the embodied movements.

As Kaiser defines, the digital images "are not simply 'disembodied,' but rather differently embodied, being true ··· not to appearance but to movement."[84] That is, the virtual movements are

78) D. Reynolds(2000).
79) K. De Spain(2000), p.13.
80) Ibid., p.12.
81) S. Rubidge(1999), Defining Digital Dance, *Dance Theatre Journal* 14(4), p.41.
82) P. Kaiser(2000a).
83) P. Kaiser(2000b).

considered as not disembodied presences which exclude corporeal perceptions, but rather as another kind of an embodied practice which takes place in cyberspace. In this respect, the created virtual bodies connote the concept of corporeal virtuality. As a technological tool for creating the digital body, motion-tracking sensors were attached to the bodies of Cunningham's dancers, and they enable the embodied movements to reach into digital space. Then, digital technology becomes part of the representation of the physical movement. The performance, *BIPED*, reveals that virtual technology is an extended medium to incorporate embodied experiences into the world, while it reconfigures and alters the corporeal experiences of the actual dancers into the virtual animations.

The digitalised bodies of *BIPED* are not merely constructed without physical agency, since they are reconfigured forms of the embodied practices of the human dancers. Therefore, Cunningham demonstrates that the virtual body is not a collective of digital codes that is created by pure consciousness or mind, but also frees a human being from the limitations of the physical body. In addition, he suggests that digital technology amplifies the materiality of the body, and translates it into a virtual world. The created immaterial body is a new representative medium in which the embodied movements are adopted and morphed. The virtual body in the performance resists the definition of virtuality from the Cartesian cyber-theorists.

Furthermore, Deleuze and Guattari's notion of the body without organs offers another useful context for theorising the virtual dancing body, in particular, to its relation with the physical. In case of *BIPED*, as Hutera mentions "Cunningham's triumph here is in not allowing spectral technology to supersede live kinetics,"[85] Cunningham does not have an interest or a concern about the predominance of technology over physicality. It is because he believes that the physical movements are not eclipsed by digital technology.[86] According to Scarry, what he wants through bringing the virtual images into play is that the two different qualities of the movements are confronted on the stage without one subordinating the other.[87] The actual and the virtual presences are always perceived together, although not coincidently emerging, and have constantly varied relationships with each other. These mutual relations give rise to perceptual "tensions which can not be resolved in univocal interpretations"[88] and "various imperceptible intensities" which produce "new modes of perception."[89]

The quotations from the above writers indicate that the performing space of *BIPED* are fluid, unstable, and transient, as is Deleuze and Guattari's Body without Organs. Deleuze and Guattri explain that all matter in the world is fundamentally dynamics, consisting of flows, intensities, and

84) Ibid.
85) D. Hutera(2000), Cunningham Dance Show is High-tech Triumph, *Star Tribune* 7(March).
86) S. Scarry(1999), Devising the Digital Dance, Wired, 20 April, <http://www.wired.com/culture/lifestyle/news/1999/04/19197, 2008. 8. 15.>.
87) S. Scarry(1999).
88) D. Reynolds(2000).
89) S. Broadhurst(2007), p.86.

particles, and has the potential for actualising its own virtual dimensions. The human body and virtual technology are also already, in themselves, a machinic assemblage, and can multiply themselves in conjunction with others. Deleuze and Guattri's notion of the presence of the physical and the virtual can be translated into the work *BIPED*. When actual movements encounter with the capability of technology, their dominant mechanics are broken down and reconfigured. Consequently, the physical presence forms another multiplicity, which is the virtual presence, through the process of becoming. The virtual images are the metamorphosed forms of the physical through virtual technology, but they do not mean to either replace or unify the original presence. As the dance work demonstrates, the two presences exist as individual multiplicities, while being allied to each other.

In the performance, the virtual body is considered as another potential means to represent embodied movements, since virtual technology is an extended medium of the physical body through which humans perceive external objects. Furthermore, the virtual bodies are neither "disembodied from the performer" nor "less authentic than the live."[90] The human and the digital agency have idiosyncratic shapes and qualities as multiple identities of the dancing self. Digital technology facilitates the subversion of the ontological system of a unitary body-subject and the creation of a different dimension of the dancing subject, its virtual presence. Through embodied movement scores, two kinds of origins, the actual and the virtual, are metamorphosed and interconnected with each other, which denotes the multiplied dancing self who is a being in the process of becoming.

When audiences perceive two different kinds of performers in the same performing space, they can gain a new sensory experience through creaseless and changeable intersections between the two. It is important to recognise what aesthetical implications are given by creating a new representation of embodiment, as well as by juxtaposing the actual and the virtual dancers. Therefore, the next section will explore the performing space of *BIPED*, which is situated in-between the real and the virtual, by the superposition of two multiplicities.

3. The Hybrid and Interactive Performing Space

According to Marco Novak, internationally renown scholar for his research into actual, virtual and hybrid intelligent spaces, our ways to perceive space and time after digital penetration across human cultures have been changed.[91] Likewise, the emergence of virtual space in art demands transforming viewers' orthodox understanding of dimensionality of space and time when it provides them with an unaccustomed experience of virtuality.[92]

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90) S. Dixon(2007), p.215.

91) M. Novak(1991), Liquid Architecture in Cyberspace, *Cyberspace: First Steps,* M. Benedikt ed.(Cambridge: MIT Press).

92) K. Francksen-Kelly(2007).

A new condition for aesthetic experience produced by virtual technology is practically demonstrated in *BIPED* where virtuality is situated in the context of the performing stage, as well as where audiences are given a new sense of spatiality. In the instance of *BIPED*, the stage is not perceived as being divided into two spaces for the human and the virtual, because it is a space where the two presences interlock. Reynolds indicates that "through kinaesthetic empathy with the virtual as well as the live dancers, spectators can experience a breakdown of boundaries between human and 'other' corporeality."[93] The virtual creatures unfold the ghosts of their original movement qualities, although they are differently embodied, so viewers can recognise the interior relation between the human dancers and the digital animations, and experience kinaesthetic sensations from them at the same time.

As well as the shared nature of the two mediums, theatrical devices such as the backdrop and the front scrim induce a hybrid condition of the performing stage, which dislocates the human perception of space. To place a transparent scrim in front of the viewers blurs the spatial distinction between the physical and the virtual. The actual movements are shown to audiences, passing through the scrim where the virtual movements come out. In turn, due to the transparency of the scrim, it is conceived that the projected dancers exist in the real space, flying above the human dancers. As Francksen-Kelly explains, to lay a scrim which "was used to bring the images into foreground as opposed to constituting the backdrop··· allowed for some sense of cohesion of the real and the virtual through a shared visual space."[94] Moreover, entrances and exits of the dancers at the back of the space have a vague and obscure boundary which generates "the "dematerialization" of the space of the stage."[95] The stage of *BIPED* is "a pulsating space that was in constant flux"[96] where the material and immaterial space coexist without the fixed thresholds, and where the physical and virtual dancers appear and disappear with irregular and unexpected timings. Throughout the performance, the audiences are thrown into confusion about which presence and space they perceive, due to the coincident kinaesthetic experiences from different kinds of dancers involved in the overlapped space. As a result, the spectators conceive the performing space in-between the virtual and the physical, which is analogous to feminist phenomenologist Elizabeth Grosz's concept of space.

> It is not an existing, God-given space, the Cartesian space of numerical division, but an unfolding space, defined, as time is, by the arc of movement and thus a space open to becoming, by which I mean becoming other than itself, other that what it has been.[97]

93) D. Reynolds(2000).
94) K. Francksen-Kelly(2007).
95) D. Reynolds(2000).
96) R. Felciano(1999), Dance a little dream of Merce, *Dance Magazine* 73(7), p.72.
97) E. Grosz(2001), *Architecture from the Outside*(Cambridge: Massachusetts Institute of Technology), pp.117-118.

The stage of *BIPED* becomes a site of interfaces between physical dancers and digitalised images, both of which are independent metamorphoses of the multiple self. These two kinds of the performers appear in their own locations; two-dimensional screens and three-dimensional stage. However, the space of one presence is not separated from that of the other presence, because the performing space of the dance work are constructed by the way the two dancing bodies simultaneously engage in spatial experience, and interface with each other's practice, rather than by the way that they are shown in the stable place. The performers of the virtual and physical are continually transforming their shapes and forms, and then the territories of their practices are also displaced during the performance. The interactive movements of the co-presence situate the stage of *BIPED* on "a threshold, or liminal terrain"[98] of the virtual and the real. Furthermore, they allow the audiences to engage in a new mode of spatial perception, producing aesthetic features such as multiplicity, indeterminacy, and hybridity.

IV. Conclusion

Technology has a significant role in the formation of a self identity, and it has penetrated into human life as well as the body with the radical expansion of cyberspace. People participate in communities in virtual space without bodily contact with others, and the norms and relationships within cyber communities can be different from those existing in real space. Cyber-enthusiasts maintain that cyberspace consists of disembodied experiences which are enacted by the mind, as well as being utterly excluded from the physical body. Yet, in fact, technologies which range from relatively simple instruments such as a chair or an eyeglass, to high-tech systems such as the Internet or prosthetics, have been developed by reflecting the ways in which the human body perceives external objects, as Ihde argues "the ultimate goal of virtual embodiment is to become the perfect simulacrum of full, multisensory bodily action."[99] The creation of virtual space does not result in a worthlessness of corporeality which leads to the replacement of a physical body by a virtual body. Instead, through virtual technology as another medium, embodied experience is extended to perceive immaterial objects. Therefore, the actual body and space are not separated from digital technology and digital space, rather different presences are merged, which construct a multiple and fluid self in the world.

The effect of digital technology has spread into the dancing body, and as a result, in recent dance performances, movements are represented by digitalised images as an alternative performer who is composed from electronic codes. The invention of virtual dancers accentuates a fear about that

98) S. Dixon(2007), p.240.
99) D. Ihde(2002), *Bodies in Technology(*Minneapolis: University of Minnesota Press), p.7.

breaking down a conventional sense of value in dance, which is achieved through movements inherently inhabited in the human body. The separation of a dance from the physical body brings about concerns with regard to "obscure[ing] the 'humanity' of movement."[100]

However, dance practitioners cannot ignore the social and cultural change of human life, or the extension of embodied experiences into cyberspace, since a dancing body is the physical, socially constructed and technological condition highly designed by choreographers whose artistic identities reflect what happens in the real and virtual worlds. For Bill T. Jones, who incorporates virtual technology into the work *Ghostcatching*(1999), where only virtual dancers perform, it is indicated that "we have to be careful that we don't get left behind, or that we don't miss an opportunity to share what we know about the human body and what we love about live performance, share it with the future; and that we don't become so protective of this little domain that we have which, as we know, is undervalued and underfunded, that we don't have the courage to step out."[101] Jones emphasises the necessity of a consideration of how to engage with digital technology. Dance practitioners inevitably require learning on how to form movements with digital technology, and how to choreograph with disembodied dancers in virtual space, so as not to lag behind the times. Moreover, he maintains that virtual dance reveals a possibility of "movement — in time, in space — that must succeed on its own, without the help of the human personality and human performers."[102]

This paper lays stress on the potential for virtual dance in terms of the creation of new "impossible anatomies,"[103] rather than the concern about the vanishment of the humanity, insisting that disembodied movements can be valued as dance. Then, choreography without the human body does not mean the disparagement or abandonment of corporeality. Rather, materiality, movement, space, and time are amplified and transformed into cyberspace through virtual technology. That is, a virtual body is conceived as an extended medium for representing movements into which bodily sensory and perceptual experiences are condensed. This argument is demonstrated by the analysis of Cunningham's *BIPED*, where embodied and disembodied movements are co-occupied on the performing space. In the performance, the digital and human performers coexist as independent multiplicities of a dancing subject, being allied to each other without a sense of hierarchy. The juxtaposition of two types of dancers as well as the oscillations of embodied movements between the virtual and physical realm allow audiences to locate on the threshold of the physical and the virtual.

This paper does not enthusiastically praise technology from the technophilic perspective. It argues that if dance practitioners avoid technological effects to transform human life so as to prevent the

100) K. De Spain(2000), p.16.
101) B. T. Jones, cited in K. De Spain(2000), p.5.
102) Ibid., p.16.
103) J. Birringer(1998), *Media and Performance: Along the Border*(Baltimore: Johns Hopkins University Press), p.159.

artistic ontology, dance would get behind the times, and as a result, be placed in a marginal position. The development of digital technology in dance practices is still in its infancy, but the current challenges to creating virtual dancers shown in the case study have significant implications for future provisions of contemporary choreographers.

■ Bibliography

Ansell-Pearson, Keith(1999). *Germinal Life: The Difference and Repetition of Deleuze*. London: Routledge.

Bernet, Rudolf(1993). *The Subject in Nature: Reflections on Merleau-Ponty's Phenomenology of Perception*. In *Merleau-Ponty in Contemporary Perspectives*. P. Burkes and J. Van Der Veken (eds.). Dordrecht: Kluwer Academic Publishers.

Birringer, Johannes(1998). *Media and Performance: Along the Border*. Baltimore: Johns Hopkins University Press.

Broadhurst, Susan(2007). *Digital Practice: Aesthetic and Neuroesthetic Approaches to Performance and Technology*. Hampshire: Palgrave.

Brown. Carol(2006). Learning to Dance with Angelfish: Choreographic Encounters Between Virtuality and Reality. In *Performance and Technology: Practices of Virtual Embodiment and Interactivity*. S. Broadhurst and J. Machon(eds.). Hampshire: Palgrave.

Deleuze, G. and F. Guattari(1987). *Thousand Plateaus: Capitalism and Schizophrenia*. B. Massumi (trans.). Minneapolis: University of Minnesota Press.

Dixon, Steve(2007). *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*. Cambridge: MIT Press.

Featherstone, M. and R. Burrows(1995). *Cultures of Technological Embodiment. An Introduction*. In *Cyberspace/Cyberbodies/Cyberpunk: Cultures of Technological Embodiment*. M. Featherstone and R. Burrows(eds.). London: SAGE Publications.

Fraleigh, Sondra Horton(1987). *Dance and the lived body: a descriptive aesthetics*. Pittsburgh: University of Pittsburgh Press.

Grau, Andrée(1995). On the Notion of Bodily Intelligence: Cognition, Corporeality and Dance. In *Border Tensions: Dance and Discourse*. C. Jones and J. Lansdale(eds.). Guildford: University of Surrey.

Grosz, Elizabeth(1994). *Volatile Bodies: Towards a Corporeal Feminism*. Sydney: Allen & Unwin.

Grosz, Elizabeth(1995). *Space, Time and Perversion: The Politics of Bodies*. Sydney: Allen and Unwin.

Grosz, Elizabeth(2001). *Architecture from the Outside*. Cambridge: Massachusetts Institute of Technology.

Hayles, N. Katherine(1996). *Embodied Virtuality: or How to Put Bodies Back into the Picture*. In *Immersed in Technology: Art and Virtual Environments*. M. A. Moser(ed.). Cambridge: MIT Press.

Heim, Michael(1993). *The Metaphysics of Virtual Reality*. New York: Oxford University Press.

Ihde, Don(2002). *Bodies in Technology*. Minneapolis: University of Minnesota Press.

Kozel, Susan(1995). The Virtual World: New Frontiers for Dance and Philosophy. In *Border Tensions:*

Dance and Discourse. C. Jones and J. Lansdale(eds.). Guildford: University of Surrey.

Marx, K. and F. Engels(1976). *Collected Works. Volume 6*. Moscow: Progress Publishers.

McLuhan, M. and W. Watson(1995). *From Cliché to Archetype*. New York: Basic Books.

Merleau-Ponty, Maurice(1962). *Phenomenology of Perception*. C. Smith(trans.). London and New York: Routledge and Kegan Paul Ltd.

Mitchell, William J.(2003). *Me + +: The Cybrog Self and the Networked City*. Cambridge, Mass: MIT Press.

Novak, M.(1991). *Liquid Architecture in Cyberspace*. In *Cyberspace: First Steps*. M. Benedikt(ed.). Cambridge: MIT Press.

Ruthrof, Horst(1997). *Semantics and the Body: Meaning from Frege to the Postmodern*. Toronto: University of Toronto Press.

Shilling, Chris(2004). *Body in Culture, Technology and Society*. London: SAGE Publication.

Stone, Allucquere Rosanne(1991). *Will the Real Body Please Stand Up? Boundary Stories about Virtual Cultures*. In *Cyberspace: First Steps*. M. Benedikt(ed.). Cambridge: MIT Press.

Stone, Allucquere Rosanne(1995). *Identity in Oshkosh*. In *Posthuman Bodies*. J. Halberstam and I. Livingstone(eds.). Bloomington: Indiana University Press.

Vasseleu, Cathryn(1998). *Textures of Light: Vision and Touch in Irigaray, Levinas and Merleau-Ponty*. London: Routeldge.

Woolley, Benjamin(1992). *Virtual World: a Journey in Hype and Hyperreality*. Oxford: Blackwell.

Abouaf, Jeffrey(1999). Biped: A Dance with Virtual and Company Dancers, Part 1. *IEEE MultiMedia*, 6(3): 4-7.

De Spain, Kent(2000). Dance and Technology: A Pas de Deux for Post-humans. *Dance Research Journal*, 32(1): 2-17.

Felciano, Rita(1999). Dance a little dream of Merce. *Dance Magazine*, 73(7): 72.

Francksen-Kelly, Kerry(2007). The Disembodied Body: the Live, the Virtual and the In-between. *Body, Space and Technology Journal*, 6(2). Available at: http://people.brunel.ac.uk/bst/vol0602/home.html [accessed on 09/07/2008].

Reynolds, Dee(2000). Displacing 'Humans': Merce Cunningham's Crowds. Body, Space, & Technology, 1(1). <http://people.brunel.ac.uk/bst/1no1/DEEreynolds.htm, 2008. 7. 9.>.

Richardson, I. and C. Harper(2001). Corporeal Virtuality: The Impossibility of a Fleshless Ontology. *Body, Space and Technology Journal*, 2(2). <http://people.brunel.ac.uk/bst/vol0202/index.html, 2008. 6. 27.>.

Rubidge, Sara(1999). Defining Digital Dance. *Dance Theatre Journal*, 14(4): 41-45.

Schroeder, Franziska(2005). The Deleuze-ian/Guattarian Performance: Performancing at N-1 Dimensions. *Body, Space and Technology Journal*, 5. <http://people.brunel.ac.uk/bst/vol05/index.html,

2008. 7. 22.>.

Stratton, Jon(1997). Not Really Desiring Bodies: The Rise and Rise of Email Affairs. *Media International Australia*, 84(1): 28-38.

Thanem, Torkild(2004). The Body Without Organs: Nonorganizational Desire in Organizational Life. *Culture and Organization*, 10(3): 203–217.

Vasseleu, Cathryn(1994). Virtual Bodies/Virtual Worlds. *AFS*, 19: 155-169.

Cunningham, Merce(2000). *Merce Cunningham Focus Day*. Interviewed by A, Macaulay. London: Barbican Centre.

Hutera, Donald(2000). Cunningham Dance Show is High-tech Triumph. *Star Tribune*, 7(March).

Kaiser, Paul(2000a). Summer Dance: Merce Cunningham, Interviewed by C. Atlas and S. Schwartz. 26 August. BBC2 television.

Kaiser, Paul(2000b). New Bodies, New Realities: Live Chat Room. 15 October. London: Institute of Contemporary Arts.

Novak, Marcus(1996). Trans Terra Form: Liquid Architectures and the Loss of Inscription. Incorporations. <http://www.t0.or.at/~krcf/nlonline/nonMarcos.html, 2008. 8. 1.>.

Scarry, Siobhan(1999). Devising the Digital Dance. Wired. 20 April. <http://www.wired.com/culture/lifestyle/news/1999/04/19197, 2008. 8. 15.>.

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Abstract

Interfaces between Physical and Virtual Bodies in Merce Cunningham's *BIPED*

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The paper explored philosophical and aesthetic implications of a virtual body in the context of a live dance performance Merce Cunningham's *BIPED*(1999), based on social and cultural discourses on a virtual body as well as theories of two philosophers Maurice Merleau-Ponty and Gilles Deleuze. As a result, it argued that in the performance, the digital and human performers coexist as independent multiplicities of a dancing subject, being allied to each other without a sense of hierarchy. The juxtaposition of two types of dancers as well as the oscillations of embodied movements between the virtual and physical realm allow audiences to locate on the threshold of the physical and the virtual.

Keywords: Dane and technology(춤과 테크놀로지), *BIPED*(바이패드), Virtual body(가상 몸), Merleau-Ponty(메를로 퐁티), Deleuze(들뢰즈)