

Redefining the Body in Cyberculture: Art's Contribution to a New Understanding of Embodiment

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*These are the words of Yunus
And we all agree they are right and sound
The Truth is where you need it to be
It is all within the body we found*

Yunus Emre (1238 – 1320)¹

Abstract: The advance of digital technologies and evolution of cyberculture have rejuvenated Modernity's Cartesian dream of the pure mind achieving an unconditional freedom by leaving the body behind. The body, now more than ever, is perceived as another object in the external materiality where, as the lineage of Western thought so obstinately insists, the *Truth* is to be found. Eastern traditions like Sufi mysticism, on the other hand, offer a stark alternative: the physical reality is dismissed as illusion, the search for the Truth is essentially internal, and the self is not a segregated and detached entity but is an ever-interconnected part of the whole. We argue that leveraging both on the ancient wisdom of the East and the immense success of science and technology of the West, cyberculture can foster a new human condition of re-embodiment, interconnectivity, and re-unity. We maintain that contemporary arts, particularly in performative and collaborative forms, have much to contribute to this endeavor, and emerging technologies like biomechatronics and neuroprosthetics, which are acclaimed by some for their assumed contribution to the ideal of disembodiment, might be exploited by artists to promote a new understanding of embodiment and humanity's interconnectedness with the rest of the existence.

Keywords: Art, body, cyberculture, disembodiment, embodiment, Eastern mysticism, Sufism

1. Introduction

The body occupies the agendas of cultural, literary, feminist, and cyber theories of the last four decades. Postmodern discourses of cultural studies and critical theory are all deeply obsessed with it. In most areas of contemporary critical literature, the body is deified, cherished and adored; but it is also contended, despised and loathed. Body is a baffling concept, which gets more elusive as its technologically re-produced versions come around.

The cyborg has become a cultural icon of the late twentieth century, proclaiming the arrival of a long-awaited byproduct of human-technology symbiosis. Cyberbody, accompanied by all kinds of innovative and fanciful ideas of disembodiment, dominates both the utopian and dystopian visions of a post high-tech world. And as it had been the case for most of its history back from Antiquity, Western mind is once again engaged in the intricate process of re-defining the body.

A striking example of this endeavor can be found in Don Ihde's book *Bodies in Technology*, where the author proposes three distinct ways of understanding embodiment.² First there is the physical, the earthly body, the body of phenomenological understanding, and the corporeal evidence of our existence. There is then socially and politically constructed body of post-modern discourses, the body whose anatomical materiality is overshadowed by "psychological, political, and cultural inscriptions and reconstitutions forced upon it".³ Ihde maintains that there is also a "third body" which is interactive with technology, the technological body, or more precisely, embodied experiences in and with technology.

"Technology" in the above definition spans a wide spectrum from low-tech varieties such as hammer and chisel all the way up to broadband networks and *Second Life* type of virtual realities of cyberspace. But, it is at the high-tech end of this spectrum that body demands a new definition. As digitalization becomes an indispensable part of our everyday lives, some of those technologies become like extensions of our bodies, and our bodies develop extensions and synthetic senses through them.⁴ Embodied experiences in and with digital technologies transform both the body and consciousness, and this transformation engenders a whole new series of attributes associated with the body. We talk about telematically-transmitted bodies, bodies that are immersed, extended, composed, substituted, etc. And it is in the midst of all this ambiguity of cyberspace, which once was declared as the "new civilization of mind" that embodiment meets its eternal antimatter; disembodiment. The concept of disembodiment, the utopian dream of the pure mind achieving unconditional freedom by leaving the body behind for a metamorphosis into a cyber or "post" body, is a perfect reconstruction of the old Cartesian duality, which itself is a descendant of the ancient Greek dichotomy between the "rational soul" and "vessel body".

2. Body in the West and in the East: A Comparative Summary

Throughout history, human body has played a crucial role in all searches of humanity to attain a comprehensive meaning for its existence. During the course of different civilizations and their cultures, the ideas and concepts that evolved around the body attest to this eternal pursuit, and could as well shed some light on the human condition that we experience today.

A. The Western Perspective

In order to start understanding the human condition of our postmodern times, one should “go back to the body, which is where all the splits in Western Culture occur.”⁵

The origins of the split between the soul and the body can be traced back to Ancient Greece, to the time of Socrates, who himself proposed that one should free himself from the body in order to achieve pure knowledge of anything.⁶ Knowledge can be attained only through contemplation with the soul, and all contact and association with the body should be avoided to that avail. Plato elaborates further on the body-soul dichotomy by appointing the soul to the world of Ideas where it dwells before entering the human body, which is a prison and, in fact, a “tomb for the soul”.⁷ In Plato’s view, the human soul consists of three parts, namely reason, passion and desire, among which reason is the most essential. Reason is also singled out as the most significant characteristics of the soul in Aristotle’s work.

The soul in classical Greek philosophy is a rational soul, and body is clearly subordinated to it.⁸ Foucault acknowledges this fact, but argues “all the concerns of the body take on a huge importance [too].”⁹ In Greco-Roman culture, one of the prerequisites of being a “good citizen” is to have a properly shaped body, which makes gymnasium one of the fundamental trademarks of the Classical era. As a good citizen, in order to lead a state-of-the-art lifestyle with proper social and personal conduct, one has to comply with the principle of *epimelēsthai sautou*, “to take care of oneself”.¹⁰ While this precept, together with the famous Delphic principle *gnothi sauton*, “know yourself”, has implications extending far beyond the physical shapes and appearances, Ancient Greek’s preoccupation with the “perfect body” is a striking example of the subordination of the body to the rational soul, and of the preconceived idea of the Western thought that the body is something we have, not something we are. That the body is an “external thing” to control, shape up, and fix when broken, is evident in the Ancient Greek practices of medicine, which studies the body as an assemblage of internal and external organs each serving distinct functions.

Early Christianity adopted the Ancient Greek notion of the body-soul dualism with a particular emphasis on the Aristotelian version, and with a little twist that the body was now sinful and the soul was divine. Salvation could only be achieved by getting rid of the sinful body through purifying the soul. Theories on the dualistic nature of body and soul proposed by the church fathers of early Christen era had much influence upon the Medieval Christianity and Scholasticism. There was however one major difference; Ancient Greek association of the soul with reason (or passion and desire, for that matter) has been stripped away for the sake of the absolute authority of the church over its congregation. Reason would reclaim its superior position

in this eternal dichotomy almost a millennium later, and its spectacular come back would be much more perennial.

In 1637, René Descartes, arguably the most predominant forerunner of the Enlightenment, published his famous treatise *The Discourse of Method* (1637), which has become one of the most influential texts of Western philosophy. Descartes' book initiated a full-fledged philosophical discourse in the West, through which the ages-old duality of man would be re-defined. This re-definition was based on individuating and segregating the mind from the body once and for all, and subjugating it to the power of reason. In due course, the body-soul dichotomy of Antiquity and Medieval Christianity would be converted into the "body-mind duality" or the "Cartesian Split" as it has come to be known.

Dichotomy between the "rational soul" and "vessel body", which culminates in the Cartesian body-mind duality of the Enlightenment, forms the basis of the ever-persistent idea of Modernity that the self resides in the mind not the body. The body is, therefore, externalized and objectified, and subjugated to the mind only to be perceived as another object in the external materiality where, as the lineage of Western thought so obstinately insists, the *Truth* is to be found.

B. The Eastern Perspective

Mystical teachings like Taoism, Zen, and Buddhism of the ancient East, and Sufism of Islam, all elaborate body-mind duality in one form or the other. Yet the dualities of the East are fundamentally different from those of the West: opposite principles of a dichotomy do not exclude each other; even at the very extreme, each polarity is still reminiscent of its opposite twin. The dualities of the East are, therefore, mutually inclusive; the opposites are interdependent on and intertwined with each other, and it is not simply possible to conceive any one of them in solitary existence. There is a universal and constant interaction between the opposites, which causes spontaneous regeneration of one from the other.

The ancient text of Taoism, *the Tao Te Ching*, sees the body as the locus of the self, as well as a physical entity. The body "attests to my existence, allows me to share my existence with others and participate in the realm of existing beings."¹¹ Having a body is a good thing, because it is the means of one's existence; but it also subjects one to "evils and misfortunes." Almost in a Lacanian sense, *the Tao Te Ching* identifies the body with the awareness of the self as distinct from others. The body sets the boundaries of the selfhood, which are the reason for the evils and misfortunes that one experiences in life. Taoism believes that such territorial demarcations are the main cause of anxiety and suffering, because protecting them against intruders and violators exhausts the life energy. Wellbeing is attained when the boundaries that separate the individuals are dismantled by not putting the

body “at the front of the world”, letting the self go, and returning to the oneness of Tao.

The body is the seat of the self. It is good to have a body; it is evil to have misfortunes befalling the body. However, since opposites accompany and generate each other, having a body (a good) also makes one vulnerable to misfortunes (evil). It is senseless to hate misfortunes while loving the body; they must be accepted or rejected together. (...) If I can transcend the limits of my individual self and identify my own body with the body of the universe so that the whole world becomes my body, I can be freed from the anxieties of independent existence.¹²

All mystical traditions, including those of Christianity, take issue with physical materiality. For all of them, the search for the Truth should be carried beyond the physical world of matter. The underlying theme of the Eastern mystical thought, however, is the concept of unity in the universe. Every physical and spiritual being are but intricately interconnected parts of this Oneness. In many forms of religious mysticism, particular teachings and rituals can be read as asserting that the destruction of the body is a way to return to this universal unity. However, that would be a rather simplistic interpretation. As it is the case with Taoism, Sufism, and Buddhism, the actual target of destruction is not the body, but the ego, or the individual self, which thrives within the territorial demarcations set by the body. In *the Tao Te Ching* and other major ancient texts of Eastern mysticism, there is no hatred for the body or any hint of asceticism.

In different traditions of Zen Buddhism, enlightenment is referred to as a somatic experience. This becomes rather contradictory when one considers various English terms that are used for defining Buddhist practices and states of consciousness that are achieved through them, like *meditation*, *mindfulness*, or the ultimate aim, *enlightenment*. In their literal sense, all these terms relate to a state of being-in-the-mind rather than a state of being-in-the-body, even implying a pre-condition for disembodiment. Yet the reality can't be any further than that. The very first thing that Buddhism requires of its practitioners is to fully inhabit their bodies, to become fully aware of the body and its interconnectedness with the world. Present moment awareness or mindfulness starts with observing every little change in physical experience, and in meditation practice, embodied awareness facilitates awareness of feelings, emotions and thoughts.¹³

In his *Mesnevi*, almost in line with Tao's principle of union of opposites, the great Sufi Master Rûmi says: “The physical form is of great importance; nothing can be done without the consociation of the form and the es-

sence. (...) The spirit can not function without the body; and without the spirit the body turns cold and freezes.”¹⁴ Sufism, the mystical tradition of Islam, sees the human body as the sign of the creator, the manifestation of God’s names and attributes, and venerates it as the paragon of beauty in the material world.

[The body] is material, therefore ephemeral, limited in space, fragile, even brittle; however, it is material infused with spirit and therefore is eternal, unbounded by space, opening into the infinite (...) We are clay infused with light, matter that crackles with the sparks of the energy of life.¹⁵

3. The Myth of Disembodiment in Cyberspace

The principle of Cartesian duality is the foundation of the relationship that modern Western mind establishes with the human body. The body is viewed as a mechanism, and the bodily functions are perceived as algorithm-based procedures that can be imitated by some proper mechanical apparatus. The vision of Enlightenment that the rational mind reigns over the body, and therefore shall not be bound and limited by it, has been revived with the introduction of digital technologies and the consequent evolution of Cyberculture. Out in the vastness of cyberspace, it initially seemed that the mind/body segregation of the West has just found the right “media” to reach its ultimate goal: the utopian dream of the pure mind achieving an unconditional freedom through disembodiment.

By the 1980s, Gibson’s revelation in his famous book *Neuromancer* of a disembodied consciousness in the realms of cyberspace, has eventually transformed into a manifestation for a futuristic and techno-optimistic utopian vision, despite the dystopian prevision originally embedded in the story. Beginning from the 1980s, the “myth of disembodiment” was the new evangelic way to “escape from our embodied world” to an alternative cyber-reality, fostered in the dreams of AI specialists as well as non-technical virtual communities.¹⁶ This was the “Golden Age of Cyberspace” as Kroupa calls it, when it was the superhighway for the ones who “wanna outta there”.¹⁷ Within a decade, Barlow would declare the cyberspace as a “new civilization of Mind”, a civilization of identities who left their bodies behind.¹⁸

While Virtual Reality (VR) and Networking technologies were encouraging the dream of a pure disembodiment, robotics and cybernetics were cultivating the idea of the *cyborg*, the cyber- or post-body, which represents the pure domination of mind over body, and its right to transform and replace it through and by any technology. Behind this extropian vision of the post-human evolution, which hopes to combine human mind with technical arti-

facts in order to overcome the fragility and mortality of the body, Becker suggests, reside the fantasies of power and control over the cognitive processes and organic substrates. When “the matter is interpreted as a code, a program that can be changed according to individual wishes”, the materiality, the physical being of the body, actually anything except the mind of the subject, becomes something to be replaced with more efficient machines or virtual representations in the same manner.¹⁹ For Becker, this approach ignores or denigrates the dynamic and sensory capacity of materiality and the body’s “own sense and dynamic beyond cultural and communication formations.”

No matter how novel and innovative the involved technologies are, these cybernetic identities and post-biological subjects still appear to be perfect reconstructions of the old Cartesian subject. They share the same rational goal of controlling the body as a possessed entity, which is unconditionally externalized and excluded from the mind-self and mind-identity.

4. Embodied Experiences in Technology

Contrary to the popularity of disembodiment dreams, scholars and artists coming from various disciplines have generated an enormous literature on embodiment during the past two decades. Embodiment is an abstract concept through which we emphasize that the materiality of the body does not necessarily make it an object among other objects.

The concept of embodiment asserts that the body is not something residual, like a vehicle upon which the soul rides (as in the famous metaphor offered by Plato), or something subsidiary to the mind (as imagined by Descartes). Rather, the body is both the foundation for and the product of the coming into being of a meaningful world, which is human being.²⁰

Starting from 1990s, we have seen innumerable academic studies, and artworks, which clearly proved that digital technologies had a great potential for novel embodied experiences. VR technologies, for instance, have been utilized for embodied simulation systems in education and entertainment, as well as in psychological treatment of phobia or post-traumatic stress.²¹ All such applications demand total body awareness, which is provided by the technology in a unique number of ways.

The embodied approach is foremost important in the field of interaction design, particularly Human-Computer Interaction (HCI). When we assume the role of a user in our relationship with technology, we require that the technologies that we use be designed to perfectly fit our physical and mental capabilities to interact with them. The body of the user, therefore,

becomes the first constraint that a designer must take into account.²² Embodied interfaces utilizing movement tracking or multi-touch technologies, and HCI devices such as *Wii* are successful examples of such a body-based design approach. In fact, it has long been a dominant perspective in HCI, computer graphics and simulation technologies, to place the human body at the centre of the development process.²³

Another remarkable example of emerging technologies' contribution to new experiences of embodiment comes from textile engineering. Made possible by the application of nanotechnology, an innovative clothing material with some amazing properties facilitates new experiences in extreme sports such as *wing suit flying*. Wing suit flying is the art of flying without using anything but one's own body dressed in a special suit called the "bird-man suit", which shapes the body into an airfoil that can create lift. It has been recorded that most commercially available suits of this kind reduce the falling velocity of a skydiver from 180 to 225 km/h down to 40 to 95 km/h, with a 2.5 to 1 traveling ratio, which means that for every meter of a vertical fall, one can *fly* about 2.5 meters horizontally.²⁴ As the technology develops this ratio is expected to rise along with further decreases in fall velocity, which may then prompt even the possibility of a safe landing without a parachute, and actualize the human beings' eternal dream of flying like a bird.

5. Art and Re-embodiment

Artists have always been among the first to envision the potential of new technologies to bring out the human content in them.^{25 26} It is hardly any surprise that the last four decades of contemporary art witnessed countless number of works, by and through which artists explored the new horizons opened up by digital technologies, and had their share in the "Body in the Cyberspace" debate. On one side, there seems to be a tendency among majority of the performance artists of the digital age, as well as theorists and critics of cyberculture, to glorify the idea of virtual existence in re-configured or disembodied forms, and much homage is being paid to emerging technologies, which allegedly promise to transform, if not all together do away with the body.²⁷ A representative of this line of thought is the French performance artist Orlan, who satellite-transmitted a series of her performances that she named *The Reincarnation of St Orlan* (1990) during which her body was subjected to a number of real plastic surgery operations. Another well-known artist, who glorifies the re-construction of the body through technologies, is Stelarc. In his *Exoskeleton* (1998), he stands still on top of a six-legged pneumatically controlled robot, which he commands via his extended robotic left arm. In another of his exemplary performances, *Fractal Flesh* (1995), his body is electronically and involuntarily activated through the use of electrical sensors, by the audiences in Paris, Helsinki and Amsterdam, who

use touch-screens to send signals via the Internet. In all of his works, which he makes use of robotics and interactive computer technologies to experiment on his own body, Stelarc “emphasize[s] the ‘obsolete’ body at the mercy of technology” and celebrates the powerful solidity of his *cyborg* version.²⁸

Along with many others, these examples stand witness to the Cartesian lineage of the disembodiment front of the “Body in the Cyberspace” debate. And on the other side of the debate, there are those who praise the corporeal existence, and prefer to use technology to induce new embodied experiences that would expand human consciousness to new levels. Art, as an experimental research method, has a relative superiority among other disciplines in the sense that it can utilize unconventional systems of knowledge that are deemed unacceptable by other fields.²⁹ That is basically the reason why it can remarkably suggest alternative and innovative scenarios and humanistic approaches for the development of technology. Art, inspired by ancient Eastern teachings like Sufism and Buddhism, has already produced visionary theories and alternative practices on how technologies would and could shape human body and consciousness. Such alternative approaches are nourished by the interconnected, collaborative and rhizomatic nature of Cyberspace, which implies a huge potential for creating new holistic visions of existence.

A forerunner and one of the most notable examples of this genre is Char Davies’ immersive VR piece *Osmose* (1994). In this piece, the participant wears a stereoscopic head-mounted display (HMD) and a motion-capture vest equipped with breathing and balance sensors. Using her breath and body balance, the participator undertakes an immersive and fully embodying virtual journey through the HMD. The audience responses were recorded to range from euphoria to tears of loss. Davies compares these “reactions with those generated by psychological research into traditionally induced altered states of consciousness”; and states her belief that “full body immersion in an ‘unusual’ virtual environment can potentially lead to shifts in mental awareness.”³⁰ *Osmose* is the first of its kind not only in art but also in other disciplines in that it suggests interaction through breath and balance. Its capability to provoke altered states of consciousness implies the possibility of utilizing technology for creating shamanic consciousness states. The piece also evokes the state of mindfulness in Buddhism, since it attempts to stop the mind from being on an autopilot, and get re-focused on the present moment.³¹

Diane Gromala, in collaboration with Yacov Sharir, in her immersive VR piece, *Dancing With the Virtual Dervish: Virtual Bodies* (1994), questions body, medicine, pain and disease. Commenting on her work, the artist says:

Rather than employing the "distraction" methods of meditation favored by Western medical practices as strategies for living with chronic pain, I instead draw on certain Eastern traditions, where meditative states can lead to a sense of inward expansiveness and a newly informed connectedness to our bodies.³²

In her subsequent pieces, besides VR, Gromala utilizes biofeedback technology to further experiment on embodied experiences. Her collaborative work *Meditation Chamber* (2002) gets the user's physiological responses via a biofeedback device, to control the images that the user observes through her HMD. Simultaneously, the images in HMD and the voice in the headphones, take the user through a series of relaxation exercises.³³

Camille Baker is another media artist and a researcher, who has explored the use of biosensors and wearable computing technologies in media art, for embodiment via technology. In one of her researches, she developed a device called *The Pod* (2004), in which she made use of biofeedback technology. Similar to the *Meditation Chamber* of Gromala, *The Pod* is a responsive space, incorporating meditation, yoga and multimedia, to create a virtual experience that facilitates re-embodiment and altered states of consciousness in participants. Baker describes that as the visitors become in harmony with their minds and bodies, they create possibilities for future alternate communications like telepathy, experiments of which she makes through *The Pod*, and gets promising results. In her recent research, she studies on wireless and mobile technology and embodiment.³⁴

Besides VR, biofeedback, wearable computing and mobile communications, movement detection, gesture recognition and sensor technologies have been most popular in interactive art installations, thanks to the opportunities they offer for audience participation. The digital art group Sponge's responsive installation *T-Garden* (2000), which was exhibited in *SIGGRAPH 2000*, is a tailored example in this category. *T-Garden* is a designed environment which responds to the movements of the audience within its boundaries. Participants wear specially designed robes in bright colors that have sensors and audio speakers sewn into the fabric. The movement of the audience changes what is seen and heard within the walls of the space. To experience the responsive environment of *T-Garden*, one needs to be totally aware of her body's presence and actions within the space, which turn the environment into an experiment in embodied experience design, where participants' "embodied presence brings the space to life."³⁵

These interactive technologies have been utilized by the genre of performance art for a few decades. Contemplating on the relation of digital

performance art to the idea of disembodiment in the cyberspace, Dixon argues that the concept of mind-body split, and disembodiment for that matter,

(...) is at complete odds with the practice of artists and performers. (...) [Because] regardless of the medium, performance artists explicitly explore and enact their holistic autonomies and interiorities (gendered, spiritual, emotional, and political), not simply their bodily corporeality.³⁶

Suzan Kozel is one of those performance artists, who places human body at the center of explorations of how future generations of digital devices, as they become our extensions, may expand new physical and conscious awareness states, and facilitate advanced social, physical and emotional exchanges via the “performative act of sharing the body through digital devices.”³⁷ In one of her works *Whisper* (2003) (in collaboration with Thecla Schiphorst), she constructs a networked ecosystem of ‘bodies’, using wearable computing devices and handheld network objects. The wearable components are worn close to the skin, on clothing, around the neck, wrist, or ankles, attached to a piercing, next to the heart, or on one’s sleeve; and they collect biofeedback data from the bodies, which are sent as an input to the system. The collective output is revealed through the same devices, in terms of temperature changes, vibrations, sound, light, color, texts, images and even video. Taking place in both the installation space and the web, *Whisper* creates a body of networked bodies, not only embodied as individual bodies, but as a whole system.³⁸

As a final example from a different discipline, the condition of Zero-G, the state of non-gravity experienced in space flight, as accounted from an artist’s point of view, tells us how aerospace technologies can be re-read for a deeper understanding of body and consciousness. One such project is Frank Pietronigro’s *Research Project Number 33: Investigating the Creative Process in a Microgravity Environment* (1998), in which the artist flew aboard a NASA KC135 turbojet, and experienced for the first time creating art in a microgravity environment as scientific research. The purpose of the project was to explore how art could contribute to the harmony and personal satisfaction of astronauts in space flight missions. Artist’s commentary on his experience reveals how technology can change the perception of embodiment:

My body experienced a literal physical expansion in liberation from the constrictions of gravity. I believe that the boundaries of my body were in fact expanding at all corporeal levels of existence, including the subatomic. It is my hypothesis that literal, physiological expansion prompted

my sense of an expansion of consciousness. I felt chills at the diffusion of what appeared to be my external boundaries as I floated in weightlessness. My feelings of physical expansion in weightlessness helped fracture my sense of containment within my body's external boundary.³⁹

6. Conclusion

Our ancient cultural heritage discloses that the wellbeing and the fate of humanity is intricately bound together and entangled with the whole. Through findings of countless researches, contemporary science attests to this fact, and we realize that we need to develop new ways of understanding and communicating our interconnectedness with the world and every other being. The human body is crucial in this effort, because on this plane we live in our bodies. The body embodies consciousness, and it is our primary means of interaction with the rest of existence around us. It is our natural state of being in and with the nature to which we are so intimately attached. Paraphrasing Alan Watts, technology should be designed and utilized not to alienate us to our bodies and to the nature of our existence, but to elevate our awareness to a new state where we grasp that we are one and the same process as the universe.

This kind of a new approach to technology can become a trademark of cyberculture, which, leveraging both on the ancient wisdom of the East and the immense success of science and technology of the West, can foster a new human condition of re-embodiment, interconnectivity, and re-unity. Contemporary arts, particularly in performative and collaborative forms that embrace all key attributes of the cyberspace like connectivity, immersion, interaction, transformation and emergence, have much to contribute to this endeavor.⁴⁰ And emerging technologies like biomechatronics, neuroprosthetics and alike, which are acclaimed by various cyber-subcultures for their assumed contribution to the ideal of disembodiment, might be exploited by artists to promote a new understanding of embodiment and humanity's interconnectedness with the rest of the existence.

Notes

¹ Adapted by Â. Yurtsever from a translation by Talât Sait Halman in T. S. Halman, *Yunus Emre and His Mystical Poetry*, Indiana University Turkish Studies, Indiana, 1981, pp. 48–49.

² D. Ihde, *Bodies in Technology*, Univ. of Minnesota Press, Minneapolis, Minnesota, 2002.

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- ³ S. Dixon, *Digital Performance, A History of New Media in Theater, Dance, Performance Art, and Installation*, The MIT Press, Cambridge, MA, 2007, p. 213.
- ⁴ R. Malina, "A Forty-Year Perspective on Aesthetic Computing in the Leonardo Journal", in *Aesthetic Computing*, P. A. Fishwick (ed), The MIT Press, Cambridge, MA, 2006, pp. 43-52.
- ⁵ Carolee Schneemann quoted in T. Warr & A. Jones, *The Artist's Body: Themes and Movements*, Phaidon Press, London, 2000, p. 17.
- ⁶ Dixon, op. cit., p. 212.
- ⁷ F. Youde, "Body and Soul: Comparative Studies in Biblical Judaism, Greek Philosophy and Medieval Christianity", Proceedings of The Twenty-First World Congress of Philosophy, Istanbul, 2003.
- ⁸ Ibid.
- ⁹ M. Foucault, "Technologies of the Self" in *Technologies of the Self, A Seminar with Michel Foucault*, H. L. Martin, H. Gutman, H. P. Hutton (eds), The University of Massachusetts Press, Amherst, 1988, p. 29.
- ¹⁰ Ibid, p. 19.
- ¹¹ E.M. Chen, *The Tao Te Ching: A New Translation with Commentary*, Paragon House, St. Paul, MN, 1989, p. 72.
- ¹² Ibid, p. 87.
- ¹³ B. H. Gunaratana, *Mindfulness in Plain English*, Wisdom Publications, Somerville, MA, 2002, p. 58.
- ¹⁴ Mevlâna C. Rûmi, *Mesnevi*, translated by Ş. Can, Ötüken Yayınları, Istanbul, 2004, Vol. 5, p. 274.
- ¹⁵ S. Kugle, *Sufis and Saints' Bodies: Myticism, Corporeality, and Sacred Power in Islam*, The University of North Caroline Press, Chapel Hill, 2007, p. 30.
- ¹⁶ J. D. Bolter & D. Gromala, *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*, The MIT Press, Cambridge, MA, 2003, pp. 119-124.
- ¹⁷ P. K. Kroupa, "Voices in my Head", 1992, viewed on 1 February 2009, <<http://wiretap.area.com/Gopher/Library/Cyber/mindvox.txt>>.
- ¹⁸ J. P. Barlow, "Declaration of Independence for Cyberspace", 8 February, 1996, viewed on 1 February 2009, <<http://homes.eff.org/~barlow/Declaration-Final.html>>.
- ¹⁹ B. Becker, "Cyborgs, Agents, and Transhumanists", *Leonardo*, 2000, Vol. 33, No. 5, pp. 361-365.
- ²⁰ Kugle, op. cit., p. 13.
- ²¹ Bolter & Gromala, op. cit., pp. 124-126.
- ²² Bolter & Gromala, op. cit., p. 129.

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- ²³ C. Chesher, "Colonizing Virtual Reality: Construction of the Discourse of Virtual Reality, 1984-1992", 1994, viewed on 1 February 2009, <<http://cultronix.eserver.org/chesher/>>.
- ²⁴ http://en.wikipedia.org/wiki/Wingsuit_flying, viewed on 1 February 2009.
- ²⁵ J. Drucker, "Interactive, Algorithmic, Networked: Aesthetics of New Media Art", in *At a Distance*, A. Chandler (ed.), The MIT Press, Cambridge, MA, pp.34-59.
- ²⁶ D. Kerckhove, "Network Art and Virtual Communities", originally written for *Art Futura*, 1995, viewed on 1 February 2009, <http://www.va.com.au/parallel/x2/journal/derrick_dk/ddk.html/>.
- ²⁷ Take for instance Marcos Novak, an artist and theorist himself, who makes the bold claim that "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, then the future of dance must be found in disembodiment." Novak quoted in Dixon, op.cit., p. 211.
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