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EDITORIAL

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We often discuss consciousness in these pages as if it is a foregone conclusion that we understand what it actually is. By exploring fields such as artificial intelligence, artificial

life, virtual reality and so on, we may discover and develop sophisticated means of replicating human behavior and thought, but if we ask exactly what is consciousness - a deceptively simple question - we may very well come up empty-handed. Scientific research, despite stunning achievements in investigation and measurement of brain activity, still leaves many unanswered questions about the mind. Is it merely a physical entity? Is it resident in the brain, the body, the neurons? Is consciousness exclusive to the realm of "living beings" or can it be created artificially? What is its nature and where does it come from?

Although we may be tempted to regard science as infallible in its search for truth, if we look into ancient spiritual traditions such as Hinduism and Buddhism, we find extremely sophisticated and profound studies of these very questions. These inquiries, moreover, are not mere theories - they are experiential, based on active investigation of the inner workings of the mind and the practice of methods that help to develop and expand the possibilities of the mind. Recent scientific studies also increasingly indicate that such practices can have tangible effects on functions of the brain, improving mental and physical health [ 1 ] .

Rather than thinking of these modes of thought as separate - "science" on the one hand and "religion" on the other - it seems to me an extremely worthwhile line of inquiry to study where these views overlap and complement each other, without ignoring their basic differences. This has, in fact, been a central concern of numerous symposia and studies in the past few years, one of the most notable being the Mind and Life conferences, an annual series of discussions between Western experts in neurology, psychiatry, cognitive psychology and other fields and experts on Buddhism, such as the Dalai Lama of Tibet [ 2 ] . A number of books have been published from these conferences, yielding fascinating insights into the different aspects of these debates.

I have chosen articles for this issue representing a wide range of opinions and perspectives on this discourse. B. Alan Wallace, a pioneer in the interdisciplinary study of science and contemplative spiritual traditions (and translator for many of the above-mentioned conferences), contributes an article addressing the question of why science is able to tell us so little about the subjective realm of the mind while making such astonishing discoveries in the realm of the "objective" world. William Magee looks into the relationship between body and mind as discussed in Tibetan Buddhist thought, comparing this to scientific views and to Cartesian notions of body/mind duality. Robert C. Morgan writes about \*Samadhi\* - an exhibition he curated that explores the notion of samadhi, or meditative concentration, through the eyes of 11 artists. Singaporean artist Kok Kee Choy discusses \*Amala,\* an interactive artwork presenting his vision of the highest level of consciousness as presented in certain schools of Buddhism. Nina Czegledy discusses the work of artist Nell Tenhaaf and how this sheds light on studies of consciousness and artistic practice. Finally, in Leonardo Digital Reviews, we include a recent review by panelist Robert Pepperell, which discusses a book about art and the Indian Vedic science of consciousness.

In these turbulent times, it certainly cannot hurt to explore ways of thinking that could lead to greater balance and harmony among people in the world. Therefore, I hope that these articles

can contribute in some way to expanded discussion of these ideas, as opposed to holding rigidly to our ideas as the only ones of value.

I would like to thank all the contributors to this issue, who have been very patient with my constant prodding and tight deadlines, as well as the peer-reviewers and LEA staff, especially Nisar Keshvani, who encouraged me to take this project on.

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FEATURES
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< The Scientific and Contemplative Exploration of Consciousness >  
by B. Alan Wallace, [alanwallace@earthlink.net](mailto:alanwallace@earthlink.net).

As we enter the twenty-first century and look back on the past 400 years of scientific progress, who can fail to be impressed by the frontiers of knowledge that have been opened to human inquiry? The physical sciences have illuminated the realm of the extremely minute - the inner core of the atomic nucleus; events in the distant past - the first nanoseconds after the Big Bang; and phenomena on the far side of the universe - the constitution of galactic clusters billions of light years away. In the meantime, the biological sciences have made great discoveries concerning the evolution of life; they have mapped the human genome and revealed many of the inner workings of the brain. But in the midst of such extraordinary knowledge of the objective world, the subjective realm of consciousness remains largely an enigma. While neuroscientists examine the brain correlates to the workings of the human spirit, the actual nature of the mind/body correlation is still a matter of philosophical conjecture: there is no hard scientific evidence that explains \*how\* the mind is related to the brain. There is no scientific consensus concerning the definition of consciousness and there are no objective, scientific means of detecting the presence or absence of consciousness in anything, mineral, plant, animal or human. In short, scientists have not yet fathomed the nature of consciousness, its origins or its role in nature.

How is it possible that something so central to scientific inquiry, namely human consciousness, remains so elusive? Is it because it is inherently mysterious or even impenetrable to scientific inquiry? Or have scientists simply failed thus far to devise appropriate methods for exploring the frontiers of the inner spirit? To seek an answer to this question, let us review

the ways in which scientists have successfully explored other realms of the natural world.

Looking first to the physical sciences, astronomy began to move beyond its medieval heritage when researchers such as Tycho Brahe devised instruments for making unprecedentedly accurate measurements of the relative movements of the planets. Whereas previous generations of astrologers were content to focus primarily on the alleged \*correlations\* between the movements of celestial bodies and terrestrial events, Brahe made careful observations of the planets themselves, albeit with the intention to improve the precision of astrological predictions. Similarly, Galileo made precise observations of falling bodies and other terrestrial and celestial phenomena. In short, careful observations of these natural phenomena themselves were the necessary basis for the subsequent explanation of \*why\* these physical phenomena act as they do.

The life sciences developed in a similar way. In the seventeenth century, the Dutch naturalist Van Leeuwenhoek used the microscope to observe minute organisms, and over the centuries this combination of technology and precise observation of living organisms led to the development of cell biology, molecular biology, genetics and neuroscience.

It is important to bear in mind, however, that what these physicists and biologists were observing were appearances to the human mind, not external, physical objects existing independently of consciousness. The mind has always played a central role in scientific observation and analysis, yet the scientific study of the mind did not even begin until 300 years had lapsed from the time of Galileo. The obvious assumption behind this long delay was that consciousness plays no significant role in nature. But this is a metaphysical assumption, not a scientific conclusion. Whether or not that hypothesis is a valid one, it is certainly an oversight to postpone for three centuries the scientific examination of one's primary instrument of observation of the natural world: human consciousness.

At the dawn of the modern science of the mind in the late nineteenth century, the pioneering American psychologist William James defined this discipline as the study of subjective mental phenomena, their relations to their objects, to the brain and to the rest of the world [1]. He argued that introspective observation must always be the first and foremost method by which to study these issues, for this is our sole access for observing mental phenomena directly [2]. This approach parallels that of Tycho Brahe, Galileo and Van Leeuwenhoek in the development of astronomy, physics and biology, respectively: carefully observe the phenomena themselves before trying to explain their origins or the mechanical laws governing their movements. James added that introspective study of subjective mental events should be complemented with the objective examination of their behavioral and neural correlates. Since his time, great advances have been made in the behavioral sciences and even more stunning progress is taking place in the brain sciences. But James' emphasis on the importance of introspectively observing subjective mental phenomena themselves has been largely ignored, so there has been no comparable development of rigorous methods for observing and experimenting with one's own mental phenomena firsthand.

Progress in astronomy before the time of Brahe and Kepler was hampered by both empirical and theoretical limitations. Empirically, medieval astrologers and astronomers failed to

devise new, rigorous methods for the precise observation of celestial bodies. They were too caught up in their concern with the terrestrial correlates of celestial events. Theoretically, their research was limited by their unquestioning acceptance of the metaphysical assumptions of Aristotle, Christian theology and astrology. In a similar fashion, contemporary behavioral and neuroscientific research into the mind is empirically limited by the absence of rigorous methods for observing mental phenomena firsthand. And theoretically, such inquiry is hampered by the metaphysical assumption that all mental events can be reduced to their neural correlates. This materialist premise is not a scientific conclusion, but an assumption that underlies virtually all scientific research into the mind/body problem.

It is with introspection alone that consciousness and a wide range of other mental phenomena can be examined directly. While this subjective mode of perception is still marginalized by the cognitive sciences, the contemplative traditions of the world have for centuries devised a wide range of methods for rigorously exploring the frontier of the inner spirit. Long before the time of Aristotle, the contemplatives of India, for example, devised sophisticated means of refining the attention, stilling compulsive thoughts and enhancing the clarity of awareness. This discipline is known as the development of \*samadhi,\* or deep meditative concentration, which was then used to explore firsthand a wide range of mental phenomena [ 3] .

In profoundly stilling the mind, Hindu and Buddhist contemplatives have allegedly probed beyond the realm of the ordinary human mind to an underlying substrate consciousness. In their view, experientially corroborated by hundreds of contemplatives throughout Asia, many of them adhering to diverse philosophical and religious beliefs, the human mind emerges not from the brain, but from this underlying substrate that carries on from one life to the next. This substrate consciousness need not be reified into a kind of ethereal substance, or immutable soul, but viewed more as a continuum of cumulative experience that carries on after death. In each lifetime, this stream of consciousness is conditioned by the body, brain and environment with which it is conjoined. In the context of such an embodiment, specific mental processes are contingent upon specific brain processes. The brain is necessary for the manifestation of those mental functions once the substrate consciousness is embodied, but it and its interaction with the environment are not sufficient for the occurrence of consciousness. Memories and character traits from one life to the next are stored in this substrate, not in the brain, and past-life memories can allegedly be recalled while in samadhi. However, if specific brain functions are impaired, one may lose access to their correlated mental functions as long as the substrate consciousness is conjoined with a body.

Pythagoras, Plato, Origen (a highly influential, third-century Christian theologian) and much of the Christian community during the first four centuries of the common era affirmed the continuity of individual consciousness from one life to the next. While Augustine thought that souls are likely created due to conditions present at the time of conception, he acknowledged that, as far as he knew, the truth of this hypothesis had not been demonstrated [ 4] . Moreover, he declared that it was consonant with the Christian faith to believe that souls exist prior to conception and incarnate by their own choice [ 5] . This subject, he claimed, had not been studied sufficiently by Christians to be able to decide the issue. Acceptance of the

theory of reincarnation in the Western world decreased from the fifth century onwards due to its condemnation by ecclesiastical councils and the decline of contemplative practice in general and the cultivation of deep meditative concentration in particular.

The theory of the substrate consciousness and its relation to the human mind has not been invalidated by contemporary neuroscience. While James did not advocate reincarnation, he believed that the relation of the brain to the mind is akin to that of a prism refracting light, rather than mental events originating from the brain [ 6]. He declared that this non-materialist view was compatible with the neuroscientific knowledge of his day, and this remains true today, so there are no purely scientific grounds for assuming a materialist view of the mind. While materialists claim that the burden of proof of the non-physical nature of the mind rests on those who can provide evidence to that effect, this is open to question. Introspective observation of mental phenomena does not suggest that they are physical in nature, nor does it provide knowledge of the brain. Likewise, the study of neural events alone provides no knowledge of the mind: one never sees any mental events in the brain, just electrochemical events. So it takes a leap of faith to believe that mental events are really brain functions viewed from a subjective perspective. Generally speaking, if one believes that two types of phenomena that \*appear\* to be radically different are in fact identical, the burden of proof lies in demonstrating their equivalence.

Is the belief that the mind is nothing more than a function, or emergent property, of the brain a scientific hypothesis? If so, there should be some way, at least in principle, to falsify that claim. Otherwise, it loses its status as a scientific theory. Insofar as scientific research on the mind/body problem is confined to the study of the behavioral and neural correlates of the subjective experience, it is hard to imagine how one could ever test for the existence of non-physical mental events. One would need to step outside materialist methodologies in order to detect anything non-physical. One viable way to put the materialist hypothesis to the test, thereby establishing its status as a scientific theory, is by studying the empirical evidence suggestive of reincarnation. Such research has been done not only by contemplatives exploring their past-life memories but by modern researchers, such as psychiatrist Ian Stevenson [ 7]. His remarkable work, however, has received little attention by the scientific community.

The reason for this may be quite simple. As neurologist Antonio Damasio comments, many neuroscientists are guided by one goal and one hope: to thoroughly explain \*how\* neural patterns become subjectively experienced mental events [ 8]. Thus they do not welcome empirical evidence that might suggest that the goal of their research is illusory. This situation is reminiscent of the goal of medieval astronomers to demonstrate how all celestial bodies move in perfect circles - eventually Kepler, who was also committed to this belief, was distressed when the empirical evidence accumulated by Tycho Brahe forced him to conclude that this long-held assumption was false.

With the union of scientific and contemplative inquiry, humanity may explore the frontier of the inner spirit in unprecedented ways [ 9]. The importance of such collaborative research can hardly be overestimated. The very nature of human identity is at stake, and those who are committed to the pursuit of truth must be rely on rigorous, empirical research, even if it invalidates

their most cherished assumptions.

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< Materialism and the Immaterial Mind in the Ge-luk Tradition of Tibetan Buddhism >  
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As the XIVth Dalai Lama, Tibet's exiled political and religious leader, points out, the embodiment of consciousness is a topic of great importance both to Tibetan Buddhist philosophers and to modern scientists [ 1]. As it happens, the \*Ge-luk\* school of Tibetan Buddhism, of which the Dalai Lama is one of the major exponents, is dualistic: Ge-luks assert that mind and matter arise from different causes and are mutually exclusive. Although mind can exist apart from matter, mind functions cooperatively with matter, when embodied, like a rider mounted on a horse.

In this article, I examine the mind-body connection from the point of view of the Ge-luk school, differentiating its view of fundamental mind from non-dualist materialism and the dualism of Descartes. Although scientists and philosophers, both in the East and West, have excluded many nuanced approaches to the mind-body problem, there are in general three prominent ways in which they

have described the embodiment of consciousness:

1. Materialism - mind and matter arise together and exist in a relationship of being one nature.
2. Cartesian dualism - mind and matter arise separately and exist in a substantial relationship.
3. Fundamental mind - mind and matter arise separately but are related, as a rider to a horse.

The first relationship, which I refer to here as the materialist view, is non-dualist in the sense that mental states are said to involve only physical properties. Describing his materialist "identity" theory of mind, philosopher U. T. Place states, "there is nothing that the introspecting subject says about his conscious experiences which is inconsistent with what the physiologist might want to say about the brain processes which cause him to describe the environment and his consciousness of that environment in the way he does" [ 2 ] . Similarly, D. M. Armstrong wrote in 1981 that "If we consider the mind-body problem today ... the present state of scientific knowledge makes it probable that we can give a purely physico-chemical view of man's body. It seems increasingly likely that the body and the brain of man are constituted and work according to exactly the same principles as those physical principles that govern other, non-organic matter" [ 3 ] .

The second relationship, Descartes' substantialist view of matter and consciousness, asserts different substances - mind and matter - united in a substantial relationship. Descartes' answer to the mind-body question has two parts: (1) mind has reality apart from the body and (2) mind is substantially united with the body [ 4 ] . By "substantially united," Descartes means that mind is conjoined to the entire body but with a more direct and explicit conjunction at the pineal gland [ 5 ] .

The Buddhist view - wherein mind and matter arise separately but are related as a rider to a horse - acknowledges a profound mind-body connection without asserting that consciousness and matter are connected substantially. Although mind and body are seen to be different entities, they function cooperatively and assert a profound influence on each other's states. Certain strains of thought in Tibetan Buddhism account for this cooperation and influence by asserting an immaterial mind separate from matter but "mounted" throughout the physical body on a system of subtle "channels" and "winds." Similar notions of a mind mounted on a body were dismissed by Descartes, who argued that the mind must be substantially related to the body in order to constitute "a real man." For Descartes, the relationship of a pilot with his ship is not intimate enough to stand as a metaphor for the mind-body connection [ 6 ] . Buddhists, on the other hand, find nothing inappropriate in the rider/horse metaphor.

#### THE FUNDAMENTAL MIND

The Buddha taught that there are countless individual minds in the universe. Each mind that exists today has always existed, without a first moment, taking rebirth in one body after another. Each mind will continue to take rebirth until it achieves its full potential in the omniscient state of Buddhahood. This achievement of a mind's full potential is caused by eliminating the "afflictions" that prevent enlightenment: ignorance, desire, anger and so forth. This thorough elimination is possible because



the afflictions are temporary, that is, they do not subsist as the nature of the mind. The mind itself is seen as fundamentally pure, allowing for it to be cleansed of the accompanying afflictions.

In certain presentations, the basic consciousness that goes from lifetime to lifetime prior to enlightenment is called the fundamental mind [ 7]. Following enlightenment, the fundamental mind abides as the omniscient "Truth Body" - the mind of a Buddha. From birth until death, this fundamental mind is mounted on the body like a rider on a horse. After death - and also during lifetimes in immaterial realms and after enlightenment - the mind continues onward moment by moment without requiring a material support, created newly each moment as an effect of its own previous moments.

The fundamental mind (like all other minds, according to Ge-luk ontology) is empty of inherent existence, meaning that it does not exist ultimately (since it cannot be found under analysis) but exists only conventionally, designated in dependence on its causes, moments and so forth [ 8]. Ge-luk philosophy argues that only a mind that exists as a mere designation could evolve from a state of ignorance to a state of omniscience, since a more substantially existent mind would be unchangeable. Similarly, only an immaterial mind can have the qualities of clarity and knowledge that define consciousness, since a mind based on material supports would naturally be limited to an atomic structure, precluding clarity and knowledge, which are not in the realm of the atomic. Similarly, the body is said to exist merely on the conventional level, as does the mind. Like the mind, it cannot be found under analysis for an ultimate mode of existence [ 9]. In this way, a number of core assertions of the Buddhist religion - including doctrines of reincarnation, mental purification, enlightenment and ontology - can be seen to depend upon the doctrine of an immaterial mind that is empty of inherent existence and thoroughly purifiable.

#### THOROUGHLY PURIFIABLE

The fundamental mind described by the fifteenth-century Tibetan scholar Nor-sang-gya-tso is the "basis to be purified" of Tibetan religious practice, and thus it is essential within Buddhism that this mind, though temporarily defiled, be thoroughly purifiable. If it were not so, it would be incapable of becoming the omniscient mind - the Truth Body - of a Buddha. Here is Nor-sang-gya-tso's description, from the \*Ornament for the "Stainless Light,"\* of how the mental afflictions are adventitious defilements:

"...[ E]ven when water and dirt occur together, water is produced from its own substantial cause as an entity that is very clear. Dirt arises from substantial causes other than those of water, from the conditions of particles of earth and so forth. Hence, it is suitable for dirt to become separated from the entity of water and to be adventitious. Similarly, although the mind of clear light and the ... obstructions are established together from beginningless time, the mind of clear light is produced as a pure entity, from substantial causes that are its prior moments of similar type. Also, defilements arise from the clear light through the condition of improper mental application in the manner of a fish rising out of water. Therefore, defilements are adventitious in the sense that they are suitable to be separated from the natural mind of clear light."

The ability for the mind to be purified implies that the nature of the fundamental mind does not become good or bad due to conditions. The \*Ornament\* offers an analogy: "...[T]he rays of the sun descend, covering objects - good things such as jewels, and so forth, and bad things such as filth - however, it does not become good or bad due to these conditions. Likewise ... the very subtle mind of clear light indeed functions in the good birth states ... and the bad birth states ... but it does not become good or bad due to these [conditions] because, like the rays of the sun, [the fundamental mind] is naturally pure."

Although at any moment a mind may be temporarily defiled by anger or ignorance, the actual entity of the mind does not become that of anger or ignorance. According to Buddhism, the mind and its defilements are established together from beginningless (i.e. infinite) time. However, the mind is produced from substantial causes that are its own prior moments - as a pure entity - the afflictions arising separately from what is known as "improper mental application." They can be removed from their association with fundamental mind, much as mud can be removed from water, leaving a pure mental continuum.

The Ge-luk presentation of a relation wherein matter and consciousness, although arisen separately, function cooperatively has some similarities with Cartesian dualism but also has important differences. Perhaps the primary similarity between Tibetan and Cartesian assertions is that minds are immaterial. Both agree that no matter how complex a physical object such as a brain or computer is, it can never be a mind, which has unique cognitive and conceptual abilities. Descartes, however, insists on the existence of a substantial connection between body and mind, which as such is unacceptable to Buddhists on ontological grounds. A further ontological difference is Descartes' assertion of the ontological superiority of mind over matter. Buddhists do not assert a substantial superiority of mind, citing mind and matter both as equal in lacking inherent existence.

#### CLASSIFYING MATERIALISTS AS NIHILISTS

The doxological literature of the Ge-luk order classifies Buddhist and non-Buddhist schools primarily according to their assertions of the self (atman). Regarding the non-Buddhist schools, the Tibetan scholar Jam-yang-shay-ba (1648-1721), in his encyclopedic \*Great Exposition of "Tenets,"\* identifies 11 non-Buddhist schools of Indian philosophy propounding a permanent self, and one school of materialists, the Lokayatas [10]. The Lokayatas, according to Jam-yang-shay-ba, believed that mind is a product of the four material elements - earth, water, fire and wind. They also asserted that the continuum of the self is annihilated at death and that former and later births, the cause and effect of actions, and so forth, do not exist. These positions, together with their materialist stance on mind, are all classified as "nihilistic" in the \*Great Exposition of Tenets.\*

Jam-yang-shay-ba elaborates upon Lokayata assertions on the cause of mind: "From the four great mindless elements the existence of mind is produced ... like the production of effects from causes having non-homogeneous characteristics, such as the power of inebriation from beer, fire from a magnifying glass..." [11]. This passage expresses the Lokayata position on non-homogeneous production of mind from matter, but Jam-yang-shay-ba does not believe that mind arises in this way, positing that mind is the effect of its previous moment. Mind, he posits, can only arise

from mind: it cannot be created newly from matter. This position enjoys wide acceptance amongst Buddhist schools.

Another important Tibetan scholar, Jang-gya-rol-bay-dor-jay [12], in his \*Presentation of Tenets\* [13], examines the logic of three different Lokayata assertions that attempt to explain how mind is embodied. These three assertions of mind-body relationship, with examples, are: (1) the nature of the body includes mind, just as the nature of beer includes the power to intoxicate; (2) the mind is an effect of the body, just as light is the effect of a lamp; and (3) mind is a quality of the body, just as a wall-painting is a quality of its wall. Each of these three theories sets forth a mind dependent on the body for its existence but in a way that allows mind to be both the nature of matter and yet somehow distinct from matter. In the first, the assertion is that mind and body are one nature; in the second the relationship between body and mind is cause and effect. The third is more difficult to characterize, but it appears to be an assertion that mind is an uncaused accompaniment to body, distinguishable from body but not capable of existing separate from the body.

Jang-gya-rol-bay-dor-jay does not find logic in any these assertions. His own opinion is that a mind dependent on matter would be completely dependent on matter in ways that would be observable. Therefore he refutes the first proposition - that mind is in the nature of the body - by asserting that if this relation of one nature were the case, then all the qualities of mind would appear in the body, but they do not. For instance, conceptual images could be found in the brain and a person's thoughts would be audible. His second point refutes the mind being an effect of the body. He reasons that if mind and body existed in a causal relationship such as that of lamp and lamplight, then mind's growth and decrease would follow the growth and decrease of the body, which occurs with a lamp and its light but not with a body and mind. His third point is that mind is not a quality of the body, like a wall and a mural, or else mind would be present in the body after the death of the body. Jang-gya-rol-bay-dor-jay does not dispute that a wall mural may still be present in the rubble of a ruined wall, but he disagrees that the analogy can be extended to a mind being present in a dead body.

Jang-gya-rol-bay-dor-jay's refutations are outflows of the Tibetan belief that mind and matter are mutually exclusive: despite the profound temporary connection and cooperative functioning of mind and body, no mental thing exists that is matter. Attempts to find a common locus between mind and matter are doomed to failure, since the two phenomena are contradictory, like a horse and its rider.

From the Tibetan perspective, the profound connection and cooperative functioning that exists between the body and the mind is not due to the fact that body and mind are somehow the same entity, or that they are substantially united, but rather that mind is mounted on an extensive system of winds and channels that pervade the body.

Despite differences in how this connection is said to be maintained, a profound mind-body connection is common ground between the assertions of modern scientists, Cartesian dualists and Tibetan Buddhists. A happy outcome of the recognition of this common ground would be if scientific research continued to discover points of alignment between mind and body while the ancient philosophy of Tibetan Buddhism continued to demonstrate

that the mental afflictions of ignorance, desire, anger, and all the rest can be thoroughly eliminated from an immaterial mind.

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< Project \*Amala\*: An Artistic Vision of Consciousness in Buddhism >

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\*AMALA\*: PHILOSOPHICAL FOUNDATIONS

In some schools of Buddhist thought, the spiritual functions of perception or discernment are divided into nine [ 1]. These are called the nine \*vijnanas\* (Sanskrit), or nine consciousnesses. The first five consciousnesses correspond to the five senses of sight, hearing, smell, taste and touch while the sixth to the ninth are the perceptive functions of the human mind. To perceive the entirety of the mind as possessing four particular functions may be difficult for us to comprehend, but this approach hints at the deep and far-reaching insight of Buddhism.

The sixth of these consciousnesses integrates the perceptions of the five senses into coherent images and makes judgements about the external world. For example, when one comes into contact with a bad-smelling object, one will naturally reject it - such judgment is made by the sixth consciousness. All living beings that have a central nervous system, no matter how complex or simple they may be, are said to possess this sixth consciousness.

The seventh consciousness is known as the \*mano\*-consciousness ("abstract mind") and represents a deeper function of thought than that of the sixth consciousness, allowing us to reflect on our existence rather than simply to deal with external matters of daily life. This is where our sense of self, or "separateness," comes into being. The mano-consciousness spans both the conscious and subconscious dimensions of life and includes awareness of and attachment to the self, as well as the capacity to distinguish between good and evil.

The eighth consciousness is called the \*alaya\* ("storehouse" or "repository") consciousness. This consciousness stores all the actions and experiences, or karma, of the present life and past lifetimes. These actions and experiences, accumulated through the first seven consciousnesses, exert an influence on the workings of the seven consciousnesses. According to Hindu and Buddhist

tradition, karma is the cumulative effect of the causal forces produced by everything one thinks, says and does - the sum of these actions imperceptibly influences everything a person experiences (the Freudian concept of the unconscious is somewhat similar to this). This consciousness forms the framework of individual existence.

The ninth consciousness, the basis of all spiritual functions, is called \*amala\*-consciousness, amala meaning "pure" or "undefiled." Whereas the alaya-consciousness is said to contain karmic impurities, the amala-consciousness lies within the innermost depths of life and remains pure, free from all defilement caused by one's actions in previous lives. This is the fundamental "Buddha-nature," extending from the infinite past into the infinite future. This is described as an indestructible, unchanging realm, endowed with four virtues: true self, eternity, purity and happiness [ 2 ]. When activated, its light, so to speak, floods upward to illuminate the workings of the other eight consciousnesses, so that the entire interlocking network of causes and effects forming our individual existence comes to be based on enlightenment, or a fully awakened state.

#### AMALA AS AN ARTWORK

The creation of \*Amala\* as an interactive piece is my personal homage to the universal depth of life as presented in this view of Buddhism, highlighting the potential for awakening that exists within us. I see how one interacts with and reacts to this piece as an important step - it might be seen as a personal journey, a person's unconscious spiritual link with his or her own amala. \*Amala\* deals with the audience's mental states, encouraging audience concentration on the movements of the images and the pulsating sound of bells.

The spectator is also free to influence the movement of the piece which, when left alone, gathers to form a flowery pattern - a lotus flower (moving the mouse, without clicking, over the image, causes it to change). This "gathering and returning formation" symbolizes the ultimate reality of the Buddha-nature within us, extending from the infinite past to the infinite future. This process metaphorically refers to our need, within the context of a spiritual path, to never slacken in our efforts towards self-perfection or to become overly influenced or restricted by circumstances in our environment. We need a solid foundation upon which we build our lives, which is to be discovered nowhere other than within ourselves. This is the very essence of Buddha, which we all possess and which can be tapped through Buddhist practice. This essence is said to be so powerful that it can change all our negative aspects into positive attributes - there is no need for suppression or denial.

This reflects the Buddhist teaching that the conditions of life are never independent - they instead interrelate and interact with each other. To better understand this inter-connectedness between the individual, the everyday world and the enlightened state, it is helpful to understand the Buddhist concept of ten basic states of life-conditions, or ten realms - from the "hell realms" up to Buddhahood [ 3 ]. The states of hell through rapture are commonly known as the "six lower realms," in part because they embody a person's habitual dependence upon and reaction to what goes on in his or her environment. Hell, for example, is said to be a life state of utter misery, where rage often manifests as self-destructiveness. Rapture, on the other hand, might be characterized as the state experienced by someone who

has had some personal desire fulfilled. In each of these cases, one is prevented from recognizing the transitory and illusory nature of one's perceptions.

The four higher realms - learning, realization, bodhisattva, and Buddhahood - are also known in some Buddhist texts as the Four Noble Paths. These involve an effort first to understand, then to transform oneself and one's environment. In the states of learning and realization, people make an effort to grasp the deeper reality of their own existence, thus beginning to perceive the causes of suffering and working to transform that suffering into the basis for growth. In the learning stage, this is done by studying teachings; in the realization stage, insight begins to emerge through one's contemplative interaction with the surrounding world.

While people in the learning and realization stages are primarily concerned with their own development, those in the Bodhisattva realm pursue the goal of enlightenment by devoting themselves to compassionate acts for the sake of others. The life-condition of Buddha, the highest realm, is characterized by boundless compassion, wisdom, joy and the courage and strength to surmount all hardships in order to help others attain this state. It is important to understand, however, that this highest life-condition is not at all separate from the other nine - rather, it manifests itself in the other nine and functions to transform and harmonize them, making them all into means to develop compassionate understanding and action, rather than potential obstacles to such states. Combined with the understanding of the nine consciousnesses, this system provides a means of understanding subjective and precognitive existence as well as everyday mental functions.

These interrelated concepts, the ten realms and nine consciousnesses, describe the total cognitive faculties and interactive potentials of the individual. Each person possesses all ten life states, but the dominant one at any given moment affects the other nine. If Buddhahood dominates, it will function to purify the lower realms. Its counterpart - tapping into the amala consciousness - enables us to truly see and transform our reality.

What is important to understand in this presentation is that life is seen neither as fixed nor preordained - these concepts suggest that instead of being trapped in any given life situation, one can break free of such circumstances. Because of the inseparability of one's inner, subjective life and the external, objective world, Buddhism holds that through practice it is possible to positively transform one's life and environment and create happiness for oneself and others. The ultimate aim of Buddhist teachings is to enable even the most ordinary person to do precisely this. As Buddhist teacher Daisaku Ikeda says: "Buddhism exists to enable people to realize personal growth and to improve their lives. Buddhism is always rooted in the reality of life. It is the wellspring of wisdom for bringing harmony and happiness to our families, communities and society at large" [4].

In creating \*Amala,\* it was not my intention to use it as a provisional religious device by which one achieves spiritual advancement just by interacting with it - \*Amala\* should be seen as an artist's impression of this wonderful potential, our existing inner Buddha-nature, and the possibility of self-transformation.

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2. For more information, see Daisaku Ikeda, \*SGI President Ikeda's Recent Guidance\* (United Kingdom: SGI-UK Publications, 1996).
3. In the Buddhist view, everyone is said to possess and sporadically experience each of these ten life states: hell, hunger, animality, anger, humanity, rapture, learning, realization, the bodhisattva state and, ultimately, Buddhahood, or enlightenment. These states should not be mistaken for moods we pass through or distinct physical realms - they are patterns that shape one's entire existence, states of being we experience from moment to moment. The aim of Buddhist practice is to establish and maintain the predominance of the state of Buddhahood.
4. See also Daisaku Ikeda, \*Choose Life\* (Oxford, U.K.: Oxford Univ. Press, 1989); \*A New Humanism\* (New York, NY and Tokyo: Weatherhill, 1996) and \*A Lifelong Quest For Peace\* (Boston, MA: Jones and Bartlett Publishers, 1992).

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GLOSSARY

Bodhisattva - The ninth of the ten states [ 3] , a state characterized by compassion in which one dedicates oneself to benefiting others and seeks enlightenment, both for oneself and others. One who aspires to Buddhahood.

Buddhahood - The state that a Buddha has attained; the highest of the ten basic states of life conditions or ten realms. Buddhahood is thought of as a state of perfect freedom in which one is awakened to the eternal and ultimate truth - the reality of all things - and is characterized by boundless wisdom and infinite compassion.

Enlightenment - Clear penetration, or an awakening to the truth, often used interchangeably with "Buddhahood."

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< Samadhi: The Contemplation of Space >

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The Sanskrit term "samadhi" is often used in Zen Buddhism to describe the condition of meditation in which the focus of concentration resides in the undivided self [ 1] . One Chinese scholar, Garma C. C. Chang, describes the experience of samadhi as "putting things together" or "the union of the meditator with the object meditated upon [ 2] ." In visual terms, samadhi may allude to a specific image or thought made manifest in material form. For example, Chang describes the one who meditates as being "absorbed in perfect concentration on the object upon which he is meditating [ 3] ." The experience of samadhi could be described as "a state of fusion" that produces "an intensely blissful



sensation, which is both physical and psychic [ 4 ]."

Benjamin and Amy Radcliff suggest that "in samadhi, one is completely involved or absorbed with life rather than ideas about life [ 5 ]." Thus, we could say that the relinquishment of a conventional cause-and-effect analysis of events in the everyday world is necessary in order to attain a blissful state of mind [ 6 ]. Samadhi is less about rational categories than about a closeness to life, where separations between the perceiver and the object being perceived begin to dissipate. Samadhi occurs when one leaves the realm of self-consciousness and discovers a connection between what is held within the mind and what is simultaneously being processed through one's sensory organs.

In organizing an exhibition for the new Chelsea Art Museum in New York, I chose 11 works by 11 artists that would somehow connect with one another. I did this not according to a visual theme or a method, not according to a process or even a discipline, but instead by relying on a kind of felt experience between the diversity of the various works. Whether a reductive concrete painting by John McLaughlin or a gestural painting by Jean Miotte or a series of wire-mesh cubes by Rakuko Naito, each work held its own in the space of this large gallery. I was interested in the kind of visual conversation the works might have with one another. My criterion for the selection had something to do with the singular space of the object or the visual consistency of the form according to its materials, wherein one might contemplate the form not simply as a type of formalism, but as a form in space, where a feeling for the space might preside over disturbance, and resolve itself as a kind of imperfect, abstract purity.

I realized that this approach is diametrically opposed to the kind of images so often seen in West Chelsea today - images appropriated from the commercial media or complex assemblages, presumably "loaded" with the weight of an intertextual meaning - but I wanted to go in another direction. I began searching for art from the present and from the recent past where the condition of space was both static and continuous, where the sense of structure was visible and open, and where the potential viewer might engage with the implications of the space. In essence, I wanted to feel the space moving from the outside to the inside in either direction and to converse visually and conceptually with other works in the exhibition, including the space of the physical interior in the building's first floor.

What does all of this have to do with the Zen principle of samadhi? I am neither an Asian artist nor scholar, but an American art critic and writer. I have read about Zen Buddhism, Taoism and some aspects of Hindu philosophy for over 30 years, but I am not a practitioner - my nature is simply not there. I do not have the patience or the inclination. I live in the center of an urban environment where I lecture, travel and write about contemporary art. Many of my Asian friends are Buddhists, I am not. Thanks, however, to the painter Jean Miotte and his wife, Dr. Dorothea Keeser, I was given the opportunity to organize and curate an exhibition that had a special meaning for me. When I took the concept of samadhi and applied it to contemporary art, I got excited and became more energized than I would if I had thought about meditating. But, as the Buddhist monks might say, "If you think about meditating, you'll never get there," "there" being the bliss of samadhi.

I wanted to do an exhibition that went beyond the gravity of

appearance, yet where no foregrounding of a text was necessary. I am very much against the idea of foregrounding a text in relation to the experience of art (another notion that has put me at odds with many of my colleagues. In today's cynical world, emphasis is given to appearances and separations between mind and body, between text and image, and between space and time. I chose work for my exhibition that exceeded the limitations of a single medium, but gave attention to a quality of stasis - the state of being without movement. Each work in the exhibition would be given the contemplation of space through the phenomenology of viewing [ 7 ] .

Rather than the duality of consciousness - the subject-object relationship - normally understood in Western terms, this exhibition proposes another kind of sensibility: samadhi. Would it be possible to give viewers a sense of participation in samadhi, even if only for a moment? I was intrigued by the possibility that somehow by engaging with the physical presentations of these 11 works, the visual connections and conceptual affinities would become clear - not as formalism, but as experience. Would it be possible that the viewer could enter the physical space of the gallery without rational determinants? Could the condition of one's perception be given over to an intuitive and sensory understanding of the work's structure?

The concept for this exhibition evolved over a period of several months while thinking in terms of the renovation of a former factory space in West Chelsea. The former function of this fallow space was as a toy factory, but this was several decades ago. What could this space represent now? What could it mean beyond the constraints of a mundane functionalism? The thought that art could expand one's awareness of space from a Buddhist perspective became an obsession for me. In looking for a connection between reductive form and the gesture - an opposition that also interested the late sculptor Donald Judd - the concept of samadhi came into being. In curating such an exhibition, one may aspire for certain results, even though these hypothetical results remain outside the control of one's projected vision. Duchamp used the term "art co-efficient" to describe the process whereby the viewer ultimately completes the work. In \*Samadhi,\* many viewers will complete the exhibition.

In organizing this exhibition, I became interested in artists who dealt with space in a singular, focused way - not as a maximal exegesis, but as a distillation, as a process of an emptying-out the environment. I selected artists whose works would complement one another within an active (though static) visual field. I wanted to emphasize the notion that space was not a given condition, but a created one. The participating artists include: René Pierre Allain, Robert Barry, Boem Moon, Frederick Eversley, Tadaaki Kuwayama, John McLaughlin, Jean Miotte, Joan Mitchell, Rakuko Naito, Kazuo Shiraga and Mimmo Roselli. The unique aspect of each artist's vision is what contributes to the whole.

During the installation process I became interested in how a 1969 painting by Joan Mitchell - painted in blue and brown patches on a white field, using her well-known gestural mannerisms - related to an expansive floor installation of aluminum cylinders set in a grid by Tadaaki Kuwayama. On another wall, a silvery blue monochrome - painted with automobile lacquer - by Korean artist Boem Moon related visually to a bright red painting in a heavy steel frame by French-Canadian René Pierre Allain. I saw a connection, if not a resemblance, between these works even though the artists came from vastly different cultures. Mimmo Roselli's

triangular configuration of brown cords, strung between three walls, appeared like a floating harp above eye level and related implicitly to the reductive organization used in John McLaughlin's painting of two black horizontal bars floating against a white ground. This provoked another conversation between John McLaughlin and a nearby sequence of discrete sculptural cubes, constructed of wire-mesh and folded paper, by the Japanese artist Rakuko Naito.

On another wall, Kazuo Shiraga's brilliant foot painting, made in Japan in 1961, evokes the action of the body in the act of painting while conversing with a recent, large-scale, black-and-white abstract gestural painting by Jean Miotte. Frederick Eversley's opaque convex disc, cast in plastic and situated in the far corner of the gallery, coincided with the abstract words and phrases printed diagonally on glass at the entrance of the exhibition by the American conceptualist Robert Barry. The contrasting and complementary components in the exhibition offer an effusive and ineffable sensibility to the large open space on the first floor, thus creating an open visual dialogue between the various artists' works.

And samadhi, where can it be found? Perhaps less in the objects than in the viewer's willingness to become a participant. In this way, the art can be put together and constructed as a mental image, an intentional concept, forever in transition as one moves physically throughout the gallery space as one's thoughts move within the space of the mind. It is possible, of course, that my intention has little or nothing to do with the conventional meaning or use of the term samadhi. The appropriation of the term may be misguided. Even so, the exhibition will be given another reference point, being one of experience as absence - what samadhi strives to attain. Here is another way of bringing an Eastern point of view into the West, or a Westerner's attempt to deal with Eastern thought as a viable means toward understanding art on another level, less given to the repetition of secular misrepresentations. After all the Western theory, samadhi offers another look at advanced art where privilege is given to experience by way of spatial continuity instead of the self in relation to the other.

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1. The self can be said to be a construction derived from Western culture. Psychologically speaking, it is defined by the ego. The construction of this self is contingent on separation, i.e. into "self" and "other." The meditative state realized through samadhi is "undivided," that is, without separation. In such a state, the term "undivided self" cannot refer to the self as contingent upon separation, because the self is no longer a construction of thought in relation to perception (of the other). In this context, then, the "undivided self" is the same as being without self. The problem in describing this phenomenon is due to the interference of the Western notion of the self as defined by the ego.
2. Garma C. C. Chang, \*The Practice of Zen\* (New York, NY: Harper and Row, 1959) p. 202.
3. Chang [ 1 ], p. 203.

4. Chang [ 1 ], p. 203

5. Benjamin and Amy Radcliff, \*Understanding Zen\* (Boston, MA: Charles E. Tuttle, 1993) p. 121.

6. The course of history as defined in the West advocates the relationship of cause-and-effect phenomena. In other words, a certain cause will produce an inevitable effect; thus a chain reaction of events is determined. In Zen Buddhism, the world is not perceived merely through conventional cause and effect relationships. Rather, worldly phenomena are understood as events in themselves. Something occurs in time; to observe this fact is enough.

7. In the exhibition \*Samadhi,\* the 11 artists describe space in 11 different ways. In doing so, the various interpretations of space interact with one another visually, like a network of conversations. Ultimately all the works are within the same space. The phenomenology of viewing relates to the experiential and corporeal involvement of the viewer as an entity within the space, as part of the space, seeing with one's own eyes, yet integrated with everything else that is there.

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< On Audience Awareness: The "Empathy Factor" in the Work of Nell Tenhaaf >

By Nina Czegledy, czegledy@interlog.com.

"Consciousness and New Technologies" was the theme of Seafair 2002, the Skopje Electronic Arts Fair in December 2002, which brought together cultural theoreticians, practitioners of new media, philosophers, consciousness experts, neuroscientists, artists and sociologists. This event - one among many in the past year - demonstrated how recent explorations into the nature of consciousness have found new currency among scientists and artists alike. Clearly, the topic of consciousness represents today an immense field of interdisciplinary study and practice, including the evaluation of inter-relationships between man and machine. The full engagement in this discourse by artists is demonstrated by many new interactive digital projects. Yet, observing the impressive landscape of these interactive installations, I find that conceptual and/or pragmatic evaluation of audience consciousness is missing. The following article considers this issue briefly, exploring features of audience participation as illustrated by specific artworks, including the introduction of the "empathy factor" as presented by artist Nell Tenhaaf in her \*UCBM (You Could Be Me)\* installation.

Surprisingly few artists examine the social relationship between viewers and art objects. As a result, the spectacle of technology remains a dominant feature of many interactive art projects. This is intriguing, as current technological advances clearly enable the search for enhanced communication between the artwork and the audience, providing a variety of options for an effective exploration of the state of consciousness within the interactive loop. On examination, however, underneath the most obvious and often dazzling exterior layer, one mostly encounters a pre-determined set of responses, nested in pre-framed constructions.

"Awareness," according to Collins' \*English Thesaurus\* [ 1 ], indicates knowledge, perception, realization, recognition and understanding. "Consciousness" is similarly defined, although my

antiquated dictionary offers an additional definition [ 2 ] :  
"mental and emotional awareness of an individual or a group." How do these concepts relate to notions of interactivity? How is consciousness (of the participant/viewer) addressed in interactive artworks? How can interactive technology be used to enrich social interaction?

While seeking answers to these and related questions, a long list of artists and their works comes to mind. However, a detailed analysis of the topic is outside the scope of this article. Consequently, I will illustrate my point with a few pertinent examples from works by Canadian artists.

For many years, media installation artist David Rokeby has investigated the complicated notion of interactivity and audience involvement. For him, "interaction" implies a condition in which two or more things act upon each other; in other words, a "relationship" in which all parties are both active and receptive. This provides us with two hints as to the nature of "interactive art": first, that a significant part of the content of the work is to be found in the relationship between the work and the audience and, second, that this relationship unfolds as a result of actions on the part of both the mechanism of the artwork and the audience [ 3 ] .

To navigate consciousness, Rokeby, in his ongoing installation \*Giver of Names,\* engages the awareness of his audience by creating a complex feedback loop through the perception, consciousness and memory of the viewer. The installation consists of a video camera, a computer and a sound source. The camera "observes" objects presented to it by the audience and, as Rokeby explains, "thinks about them, associates metaphorically, and then speaks aloud a sentence it formulates about its impressions of the object" [ 4 ] . Rokeby here is challenging the viewer's preconceptions of the presented "objects" while he draws them into speculative explorations. On one hand, the installation presents us with a dialogue between man and machine, art object and audience, but it also exerts a captivating effect that seduces the participant, bringing him or her into a playful liaison with the artwork.

Consciousness in the communication loop of interactivity has also been notably addressed via the \*Helpless Robot\* by artist Norman White [ 5 ] . The artificial personality of White's robot responds to the behavior of the viewer/participant by using a multitude of phrases utilizing an electronic voice. White writes that "The speech that is delivered depends on [ the robot's ] present and past experience of 'emotions,' ranging from boredom, frustration, arrogance and over-stimulation" [ 6 ] . White has tried to develop electromechanical systems endowed with "a life of their own." Yet, unlike most robots, the helpless robot is essentially passive and becomes "alive" only with human help. Although its behavior is programmed, the robot becomes unpredictable by way of the instinctive, emotional handling of the participating human. As White writes in the \*Helpless Robot\* artist's statement, "The full range of its responses are best experienced by treating it in a variety of ways, alternatively ignoring and satisfying its demands" [ 7 ] . He also writes, "I started out asking myself can a machine which is fundamentally a product of the intellect also model emotions? Are there primary emotions, like primary colours,

from which all other emotions evolve" [ 8]? \*Helpless Robot\* aims to elucidate this issue.

Artist Nell Tenhaaf's \*UCBM (You Could Be Me)\* does not resolve the issue of audience awareness, but does articulate pertinent questions and responses by inventing a simulated situation. Tenhaaf is deeply interested in how the viewer/participant experiences his or her own sense of subjectivity. \*UCBM\* presents a position-sensitive interactive video installation where visitors are "tested" and "evaluated," by a video-projected surrogate of the artist, on their adaptation to "artificial empathy." Tenhaaf describe her concept as follows: "The intention in foregrounding simulated empathy is not to advocate more mediated or artificial relations with other humans. Rather, it is to create an art experience that is aligned with the a-life goal of embodying technoscientific knowledge as well as taking into consideration its narrative and interpretive dimensions" [ 9].

\*UCBM\* investigates the nature of the interactive exchange by extending the viewer's experience. First, the video projection is activated by a viewer entering the space. A "research scientist," clad in white lab coat, becomes visible and turns to the viewer, asking: "Now, what can I find out about you? I want to know about your fitness, your empathy factor, your willingness to get involved." She proceeds with questions such as, "Do you feel exposed?" and requests responses. Through the interaction, the viewer not only becomes mindful of his or her subjectivity but also enters into the loop in the exchange of information. While the whole interchange is presented as a de facto interview, the discourse is simultaneously imbued by an amusing sense of irony. The technology of \*UCBM\* reveals Tenhaaf's ambition of building systems that hide their technical limits.

Tenhaaf's research and art practice echoes her interest in artificial life and issues of mediation. Her involvement in developmental biology and investigations related to the biosciences dates back to the late 1980s and in \*Species of Life\* (1989), she provided a commentary on scientific procedures, revealing the process of mediation from the transmission of objective, neutral facts to encoded personal data. Lately, she has begun exploring notions of embodiment or lack of embodiment, turning her attention from direct examination of body-related issues to the analysis of self-knowledge, issues of identity and emerging forms of social relations. These investigations informed several of her current projects, such as \*Neonudism,\* \*You Could be Me\* and \*dDNA (d is for dancing)\*. The emerging social networks of Internet chat rooms provided reference for \*Neonudism,\* which combined voyeuristic viewing and surrogate participation in a live "CUSeeMe" two-way video link-up.

The distancing effects of mediated communication in these chats are often criticized, but Tenhaaf feels that one can actually gain a considerable amount of knowledge about identity and the shifting paradigms of social relations through the chat interactions. In a recent conversation, she told me, "I am very interested in how the viewers experience their sense of responsibility in understanding complex things that surround us. I suppose my interest lies in those discussions, where one explores issues of identity."

Tenhaaf notes that "\*UCBM\* offers a way of picturing the active interfaces we construct with the world and how we are enmeshed in its always emerging flux." It borrows some of its methods and premises from artificial-life research: a genetic algorithm (GA)

is used both to generate some of the imagery and as a method for assessing viewers' "empathy factor." The GA, an artificial measuring device mimicking genuine standardized systems in biomedicine, takes a viewer's "empathy score," calculated from their speed of approach and their answers to three questions, and calculates it as a set of genes that mutate and cross over to form offspring. Viewers with adaptive offspring pass their genes into a gene pool that subsequent viewers interact with. In this way, the "recombinant" computation of the GA links together a population of nine viewers before resetting. Each viewer is given feedback on how they did through voice, a light display and a fitness chart. Thus \*UCBM\* is really investigating the nature of exchange with the viewer, extending his or her experience by constituting a situation where specific issues are revealed with questions such as "This is what you are like?" The response to this work varies a considerable amount from place to place, but viewers seem to get involved in trying to obtain a "high" score, often repeatedly trying the test to reach their goal.

Projects such as those discussed here have opened up experimental inquiries to evaluate the emotional state and awareness of interactive audiences. The notion of whimsy permeates several of these works, and audiences (in my experience) respond with relish to the amiable, somewhat mysterious and often unpredictable situations. The relative intimacy of the installation environments also carries an appeal for audiences, who show their curiosity by lingering, smiling, frowning, asking questions - all very different from works where the audience navigates through mouse-clicks. Presumably, the physical involvement (however slight) makes the difference.

In summary, it is too early to reach definitive conclusions about audience awareness. However, it is important to note that without these initial landmarks it would be difficult, if not impossible, to progress forward on the long journey of investigating consciousness.

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#### ABOUT THE CONTRIBUTORS

##### B. Alan Wallace

Trained for many years as a monk in Buddhist monasteries in India and Switzerland, Alan Wallace has taught Buddhist theory and practice in Europe and America since 1976. He has served as interpreter for numerous Tibetan scholars and contemplatives, including H. H. the Dalai Lama. After graduating from Amherst College, where he studied physics and the philosophy of science, he earned his M.A. and Ph.D. in religious studies at Stanford University. He has taught at various universities and has edited, translated, authored and contributed to more than 30 books on Tibetan Buddhism, medicine, language and culture, and the interface between science and religion. His most recent book is \*Buddhism and Science: Breaking New Ground\* (Columbia University Press, 2003). He is presently a research scholar and contemplative associated with the Mind and Life Institute and is in the planning stage of establishing a university-based, interdisciplinary, cross-cultural Center for the Study of Consciousness.

##### William Magee

William Magee received his Ph.D. in Tibetan studies from the University of Virginia. He is co-author of \*Fluent Tibetan,\* a course in Tibetan language, and author of \*The Nature of Things: Emptiness and Essence in the Ge-luk World\* (Ithaca, NY: Snow Lion, 2000). He is currently translating a commentary on \*Abhisamayalamkara\* (Ornament for Clear Realizations), a fundamental treatise of Indian Buddhism, from Tibetan to English for the Foundation of the Preservation of the Mahayana Tradition (FPMT).

##### Kok Kee Choy

Artist Kok Kee Choy lives in Singapore and holds an MA in Design for Interactive Media from Middlesex University, London. Prior to his studies in London, he was trained in advertising art/applied art and fine art. Kok Kee has worked in the creative industry for more than a decade as a creative consultant and art director. He is also an educator at tertiary level and advisor to art institutions. As an artist, Kok Kee's works have won numerous art awards and have been acquired by both foreign and local commercial institutions, government bodies, art museums and educational establishments.

##### Robert C. Morgan

Robert C. Morgan is a writer, international art critic, curator, poet, lecturer and artist. His recent books include \*Art into Ideas: Essays on Conceptual Art\* (1996), \*Between Modern and Conceptual Art\* (1997), \*The End of the Art World\* (1998), \*Gary Hill\* (2000) and \*Bruce Nauman\* (2002). He writes for \*Art News\* (New York) and \*Art Press\* (Paris) and is a contributing editor for \*Sculpture\* magazine (USA) and \*Tema Celeste\* (Milan). He holds an MFA in sculpture and a Ph.D. in art history and is currently adjunct professor of fine art at Pratt Institute. In 1999, he was awarded the Arcale Award for Art Criticism in Salamanca (Spain).

##### Nina Czegledy



Nina Czegledy, an independent media artist, curator and writer, has been involved in collaborative international projects for the last decade. Czegledy participated in conceptualizing and curating *\*Points of Entry,\** an electronic arts collaboration between Canada, Australia and New Zealand, which is currently touring abroad. She also developed *\*Digitized Bodies, Virtual Spectacles,\** centered on the changing perceptions of the human body, which included a series of on-line and on-site events in Canada (2000), Hungary (2001) and Slovenia (2002). Her art/science/technology interest is further reflected by collaborative projects in progress, including *\*Aurora\** and *\*The Electromagnetism of Bodies.\** Czegledy has curated over 20 international media art/video programs and touring exhibitions, which have been presented in over 30 countries. She has published widely both in Europe and North America and is currently the Chair of the Inter Society for the Electronic Arts (ISEA).

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LEONARDO DIGITAL REVIEWS 2003.02
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This month's report on Leonardo Digital Reviews is mainly limited to a list of reviews that have been filed during the first two months of 2003. We also include Robert Pepperell's review of *\*Mirror of Consciousness: Art, Creativity and Veda,\** by Anna Bonshek, to coincide with the theme of this month's LEA. The reasons for this are that first, we are catching up with our sequence of reporting in LEA after our special issues and second, as you can see, the panel has been exceptionally busy and taken up much of our allocated space just with the slate! These reviews, along with the archive for the year, are all available at the usual website:  
<http://mitpress.mit.edu/e-journals/Leonardo/ldr.html>.

Michael Punt  
Editor-in-Chief  
Leonardo Digital Reviews

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January 2003

Iconoclash: Beyond the Image Wars in Science, Religion, and Art,  
Edited by Bruno Latour and Peter Weibel  
Reviewed by Wilfred Niels Arnold

The Body Electric: An Anatomy of the New Bionic Senses,  
by James Geary  
Reviewed by Stephen Wilson

Mediaworks, by Nancy Paterson  
Reviewed by Stefaan Van Ryssen

The Virtual Score: Representation, Retrieval, Restoration -  
Computing in Musicology 12, edited by Walter B. Hewlett and  
Eleanor Selfridge-Field  
Reviewed by Stefaan Van Ryssen

Architects + Engineers = Structures,  
by Ivan Margolius. Wiley-Academy  
Reviewed by Roy R. Behrens

Artmedia VIII - From Aesthetics of Communication to Net Art  
(Conference)  
Reviewed by Maia Engeli, CAiiA-STAR

ArtSci 2002: New Dimensions in Collaboration  
Reviewed by Amy Ione

Automobiles by Architects, by Ivan Margolius  
Reviewed by Roy R. Behrens

Extreme Beauty: The Body Transformed by Harold Koda. Metropolitan  
Reviewed by Roy R. Behrens

Computer Music Journal: Music Information Processing  
Reviewed by Stefaan Van Ryssen

The Deleuze Connections, by John Rajchman  
Reviewed by Fred Andersson

DOC(K)S, 3: 21/22/23/24, 'un notre web' ('a web of ours'), edited  
by Akenaton (Philippe Castellin and Jean Torregrosa)  
Reviewed by Fred Andersson

Envisioning Science: The Design and Craft of the Science Image,  
by Felice Frankel  
Reviewed by Roy R. Behrens

JI Festival Internacional de arte, ciencia y tecnologia:  
dinamicas fluidas, by Juan Carrete Parrondo (ed.) et. al.  
Reviewed by Stefaan Van Ryssen

Transit, by John Fitz Rogers (composer) and Michael Nicollela  
(guitar)  
Reviewed by Stefaan Van Ryssen

Frost photographs, by Hans Danuser (text by Urs Stahel)  
Reviewed by Stefaan Van Ryssen

Networked Art, by Craig J. Saper  
Reviewed by Stefaan Van Ryssen

North America, by Curlew  
Reviewed by Stefaan Van Ryssen

pulse music..., by John McGuire  
Reviewed by Stefaan Van Ryssen

Computers and Typography 2, compiled by Rosemary Sassoon  
Reviewed by Michael R. Mosher

Art, Technology, Consciousness: Mind @ Large, edited by Roy  
Ascott  
Reviewed by Fred Andersson

February 2003

Archimedia: Changes and Challenges (1) Film Archives in the  
Digital era: New Concepts and New Policies, Nederlands Film  
Museum, 16-18 January 2003  
Reviewed by Michael Punt

Central European Avant-Gardes: Exchange and Transformation,  
1910-1930, Timothy O. Benson (ed.)  
Reviewed by Robert Pepperell

Conceptual Art and Painting: Further Essays on Art and  
Language, by Charles Harrison  
Reviewed by Robert Pepperell

CTRL[ SPACE], Rhetorics of Surveillance from Bentham to Big  
Brother, Thomas Y. Levin, Ursula Frohne and Peter Weibel (eds.)  
Reviewed by Stefaan Van Ryssen

From Energy to Information: Representation in Science and  
Technology, Art, and Literature, Bruce Clarke and Linda Dalrymple  
Henderson (eds.)  
Reviewed by Robert Pepperell

Virtual Art: From Illusion to Immersion (Leonardo Books),  
by Oliver Grau  
Reviewed by Amy Ione

Mille Gilles: A film by Ijsbrand van Veelen  
Reviewed by Michael Punt

Obey The Giant: Life in the Image World, by Rick Poynor  
Reviewed by Stefaan Van Ryssen

Parables for the Virtual: Movement, affect, sensation,  
by Brian Massumi  
Reviewed by Angela Ndalianis

Postmodernism and Globalization in Ethnomusicology: An  
Epistemological Problem, by Andy Necessian  
Reviewed by Stefaan Van Ryssen

Gerhard Richter: Forty Years of Painting, by Robert Storr and  
Gerhard Richter 858, David Breskin (ed.)  
Reviewed by Amy Ione

The Secret, by Eve Hoffman  
Reviewed by George Gessert

The Spectre of Hope: With Sebastião Salgado and John Berger,  
directed by Paul Carlin (VHS); Migrations, by Sebastião Salgado;  
The Children: Refugees and Migrants, by Sebastião Salgado and  
Lelia Wanick Salgado (eds.)  
Reviewed by Amy Ione

The Scientific Temper: An Anthology of Stories on Matters of  
Science, by Anthony R. Michaelis  
Reviewed by David Topper

Touch: Sensuous Theory and Multisensory Media, by Laura U. Marks  
Reviewed by Dene Grigar

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< Mirror of Consciousness: Art, Creativity and Veda >

by Anna Bonshek, Montial Banarsidass Publishers, Delhi, 2001. 470  
pp., illus. Trade. ISBN: 81-208-1774-5.

Reviewed by Robert Pepperell, pepperell@ntlworld.com.

Anna Bonshek identifies a malaise in Western art, and by extension our wider culture, in which traditional ideas of the universal, the absolute and the transcendent have been displaced by the fragmented narcissism of post-modern language games. What she argues for instead is a more durable, coherent kind of art specifically informed by the Vedic Science of His Holiness the Maharishi Mahesh Yogi, of whom she is a disciple.

For Bonshek, the knowledge embodied in the discipline of Maharishi Vedic Science is no less than a comprehensive "science of consciousness and its expressions" (p. 52). This claim, and others made elsewhere about the application of the Vedic method (such as the influence of the "Extended Maharishi Effect" on global arms negotiations [p. 106]), will not endear Bonshek, or her ideas, to the skeptical materialist critic. But the non-occidental context of this philosophy of mind (it is probably safer to call it a "philosophy" than a "science") should not give us any greater cause for skepticism than the consideration of any other theory of consciousness; if anything, its perceived distance from our established patterns of enquiry might make it all the more valuable, while it is in many ways already closer than we think.

For example, in outlining the Maharishi's conception of consciousness she quotes him as saying: "Consciousness is that which is conscious of itself. Being conscious of itself, consciousness is the knower of itself. Being the knower of itself, consciousness is both the knower and the known. Being both the knower and the known, consciousness is also the process of knowing" (p. 57). It is the "self-referential singularity" of these three qualities which "together are the indications of the existence of consciousness." This self-referential conception of phenomenal consciousness is certainly consistent with currents emerging in Western consciousness studies, particularly in some of the work of Crick and Koch, and Gerald Edelman, and if given further attention could, I believe, allow us to make significant progress in describing this most elusive aspect of our experience.

Having given a reasonable account of recent Western contemporary theories of art and a summary of the Vedic theory of mind, Bonshek goes on to explain in some detail the various doctrines and practices of the Maharishi's Transcendental Meditation-Siddhi technique. To summarize in very basic terms: there exists around us a field of pure consciousness of which most of us are only dimly aware. Through certain exercises we can gradually transcend the "lower" states of being and move towards a heightened self-referential awareness, which draws us closer to some universal coherence and unity. Art, or certain kinds of artistic practice, can aid and enhance this process.

For what it's worth, the notion of a universal field of consciousness accords with my own suspicion that thoughts "have" us as much as, if not more than, we "have" them, while also resonating with various "consciousness field theories" recently proposed by biomedical theorists such as Johnjoe McFadden and E. R. John. The bulk of this long book is concerned with imparting the teachings of the Maharishi on a variety of topics from art, creativity and consciousness to selfhood, energy and life. For the uninitiated, it is rather hard going, with a proliferation of Sanskrit terms: "The light of Creative Intelligence, on the self-referral level, is heard as sound or Sruti (the Sanskrit diacritics are not available) ... audible frequencies of sound

[that] form the basis of material particles or Tanmatras. These are measured by the five Vrttis in terms of the five Mahabhutas or elements - Akasha, Vayu, Agni, Jal, and Prthvi ..." and so on (p. 285). In addition, there are frequent, rather enigmatic passages taken from the Maharishi himself intended to support many complex and somewhat nebulous assertions made by Bonshek.

The study of philosophy, consciousness and art in the context of Asian thought is a highly fascinating area and deserves an accessible and authoritative text that draws it into current issues in philosophy of mind. As much as one agrees with Bonshek's diagnosis of the deficiencies of a lot of contemporary art, and for all its ambition, sincerity, and tantalizing detail, I do not think \*Mirror of Consciousness\* is it. A shorter, less technical book would, I feel, have won these ideas a wider audience in an intellectual market where, perhaps, they are needed most.

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ISAST NEWS
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< OLATS NEWS >

OLATS (Observatoire Leonardo des Arts et des Techno-Sciences):

<http://www.olats.org>

IDEA online/International Directory of Electronic Arts:

<http://nunc.com>

1 - Launching of the Cultural Roots of Globalization project

<http://www.olats.org/setF12.html>

Currently on-line : - A general bibliography (with two book reviews) presenting important works dealing with the deep origins of globalization. Of special interest is "Next," an essay by Italian writer Alessandro Baricco, which addresses the question of imagination. - Two essays: a translation of the conference by Roy Ascott "Planetary Technoetics" (CIREN, November 28, 2001) and a previously unpublished essay by Julien Knebusch, entitled "Planet Earth in Contemporary Electronic Artistic Production". These two essays tackle the question of a "planetary consciousness" by underlining the contribution of artists to this question. - A section entitled "Words of Globalization" approaches the linguistic consequences of globalization. This section currently lists three expressions by philosophers that attempt to grasp this phenomenon.

2 - Bill Seaman wins the 2002 Leonardo Award for Excellence

Bill Seaman has been chosen as the recipient of the 2002 Leonardo Award for Excellence for his article, "OULIPO / VS / Recombinant Poetics" (Leonardo 34:5, 2001, Digital Salon Special Issue). In his article, Bill Seaman explores alternative avenues of creativity and redefines them through visual and sonic digital media. OULIPO, or the Ouvroir de littérature potentielle (the Workshop for Potential Literature), encourages writers to explore challenging ways of mixing words and letters in their work. Recombinant poetics is the practice of playing with media-elements in generative virtual environments to create entirely new works. "VS" (versus) normally implies antagonism,

but here refers to the standard procedure of titling re-mixed techno music as "remixing deejay VS original artist." Seaman describes how the principles of OULIPO, recombinant poetics, and remixed music have influenced his work in machinic genetics. These practices led him to attempt creation of a Hybrid Invention Generator, in which a viewer/user (vuser) could choose multiple 3-D objects and fuse them to create a new invention.

Bill Seaman is head of the Graduate Digital Media Program at Rhode Island School of Design, and explores issues related to the continuum between physical and virtual/media space. The 2002 Leonardo Award for Excellence is co-sponsored by the Technoculture Studies Department and the Art Department at the University of California, Davis, where it will be presented at a prize award lecture on campus during the Spring 2003 session. For further information, visit <http://technoculture.ucdavis.edu>.

The other nominees for the 2002 Leonardo Award for Excellence were: Jean-Louis Ihermitte, "Sculpting Ionized Plasma" (Leonardo 34:3); Sheila Pinkel, "Thermonuclear Gardens: Information Artworks about the U.S. Military-Industrial Complex" (Leonardo 34:4); Ando Arike, "What Are Humans For?: Art in the Age of Post-Human Development" (Leonardo 34:5, Digital Salon Special Issue); David Toop, "Not Necessarily Captured, Except as a Fleeting Glance" (Leonardo Music Journal 11).

Panelists included Lynn Hershman (chair), Lisa Bornstein, Nina Czegledy, Fran Dyson and Edward Shanken. For further information about Leonardo/ISAST and the Leonardo Awards Programs, visit <http://www.leonardo.info>.

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