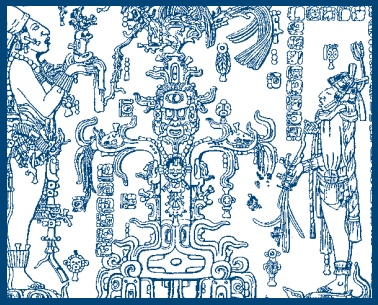

Art, Technology, Consciousness

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Roy Ascott

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Towards a Third Culture | Being in Between

Victoria Vesna

> Practice must always be founded on sound theory.
>
> Leonardo Da Vinci (Kleine, 1977, pp. 157–158)

Artists working with cutting edge technologies are frequently well informed and inspired by the exciting innovations and discoveries taking place in science. We are keenly interested in what the cultural critics and commentators from the humanities have to say on the meaning and impact these discoveries and innovations have on culture and society. Scientists can relate and understand our work easier primarily because we use the same tools – computers. Because our work and tools are in constant flux, we are forced to articulate the reasoning and meaning informing the art produced, which has traditionally been the role of art critics and historians. This creates room for an active dialogue with both humanists and scientists. Thus we are placed in between these Two Cultures, which creates a triangle between art, science and the humanities that points to a potential emergence of a Third Culture. Being 'in between' is a privileged and dangerous position, at least in this transitional stage. Therefore it is important to take a look at the background and current status of these Two Cultures.

The Ghost of C. P. Snow persists

Much of the discussion concerning the triangle of art, science, and technology can be traced back to C. P. Snow's famous annual Rede lecture at Cambridge on May 7th, 1959. The phrase 'Two Cultures' entered into a cultural controversy and debate that has endured remarkably long. The title of Lord Snow's lecture was 'The Two Cultures and the Scientific Revolution'. He identified the two cultures as the literary intellectuals and the natural sciences, and pointed to the curricula of schools and universities as the source of the problem. In the introduction to Snow's book, Stephan Collini gives a historical perspective to this divide by locating its beginning in the Romantic Period, at the end of the eighteenth and beginning of the nineteenth centuries. (Snow, 1964, p. xii) He traces the British genealogy of 'Two Cultures' anxiety in the linguistic peculiarity by which the term 'science' came to be used in a narrowed sense to refer to just the 'physical' or 'natural' sciences.

The compilers of the *Oxford English Dictionary* recognised that this was a fairly recent development, with no example given before the 1860s: 'We shall ... use the word "science" in the sense which the Englishmen so commonly give it; as expressing physical and experimental science, to the exclusion of theological and metaphysical.' (Snow, 1964 p. xi) William Whewell, a philosopher and historian of science who used 'science' in his Philosophy of the Inductive Sciences of 1840, is credited with establishing this term. The first time it was recorded as an idea, however, was at the Association for the Advanced Science in the early 1830s when it was proposed as an analogy to the term 'artist'. Yet, the

two cultures refer to the divide between the literary humanities and frequently exclude what was originally the analogy to science – art.

The idea of 'Two Cultures' was a great source of fame for Snow in the 1960s. He received twenty honorary degrees in the course of the decade and, following the Labour Party's election in October 1964, accepted Harold Wilson's invitation to become the second-in-command at the newly established Ministry of Technology, becoming the government spokesman on Technology in the House of Lords. From 1966 until his death in 1980, Snow travelled the world as a lecturer, adviser, and public sage.

In the second edition of *The Two Cultures*, in 1963, Snow added a new essay, 'The Two Cultures: A Second Look'. In that essay he suggested that a new 'Third Culture' would emerge and close the gap between literary intellectuals and scientists. (Snow, 1963, p. 53) It is significant to note that Snow originally named his lecture 'The Rich and the Poor' and intended this to be the centre of his argument: 'Before I wrote the lecture I thought of calling it "The Rich and the Poor", and I rather wish I hadn't changed my mind.' (Snow, 1964, p. 79) He remained dissatisfied with the Two Culture concept and had on several occasions tried to refine the claim. In his last public statement he makes clear that the larger global and economic issues remain central and urgent: 'Peace. Food. No more people than the Earth can take. That is the cause.' (Snow, 1968, p. 220)

Art, Science and Technology: Building the Triangular Bridge

> Scientist-artists originally conceived and designed bridges. The power-structure-behind-the-king, seeing great exploitability of the bridge for their own advantaging, accredited workers and materials to build bridges. (Fuller, 1981, p. 27)

But it seems that there is still much work to be done in building the bridge between the humanities and the sciences. John Brockman, editor of a book of essays entitled The Third Culture, negates Snow's optimistic prediction that a day will come when literary intellectuals will communicate effectively with scientists. Instead he makes the claim that the contemporary scientists are the third culture and alludes that there is no need for trying to establish communication between scientists and literary intellectuals, who he calls the 'middlemen'. (Brockman, 1995, p. 18) Although the choice of people in his book is significant, [1] the mere fact that it is comprised almost completely of Western white men, with the exception of Lynn Margolis with her essay *Gaia is a tough Bitch* makes it impossible to take his proposition seriously. But it does point to the continuing gap between the humanities and sciences and clearly shows that the bridge being constructed is still very fragile.

It is a delicate mission to be in between disciplines that are themselves in a tenuous relationship. Perhaps the greatest danger is for artists to look to the literary, philosophical, and theoretical circles for interpretations of scientific data and then further reinterpret their versions without checking back with the scientists. Much postmodern writing borders on linguistic play with mathematics and scientific terminology that serves to alienate the scientific community, which has used precise methods to arrive at those theories. This is not to say that one should blindly accept all products of the scientific community, but simply to suggest that any working relationship needs to be based on mutual respect and dialogue.

The other danger that faces those 'in between' working on creating 'something else' is the general attitude of theory being above practice, prevalent in both humanities and sciences. At this stage, it is in the practice of art that the freedom lies to make assertions that are beyond the rational and beyond necessary methodology of proving a thesis. Practice informed by theory, utilising a methodology which makes it accessible to both worlds, is the key. Or, conversely, theory informed by practice.

Currently, much of this bridge-building work takes place in universities for more reason than one. First, at this point, with no market in place, it is impossible to make a living outside of academia and industry. Between the two, academia is generally friendlier to someone searching for a yet-to-be-defined path than industry, with its pressures to produce. Second, academia is a natural environment in which one can have access to good bandwidth and updated equipment. Third, and perhaps most important, academia allows artists contact with scholars from many disciplines. In order to function and communicate effectively in this context, one must learn the etiquette and language of various disciplines. The challenge, then, is to do this without losing the intuitive 'wild' aspect, the practice, that taps into the silent, the unknown, the mysterious.

Our work depends largely on an active dialogue with scientists and humanists while performing an important function of being bridge builders. And as any engineer knows, we have to know the territory on both sides and be very precise in how we negotiate the space 'in between'. Negotiating the gap between the canon of rationality and the fluid poetic is ultimately the goal of artists who work with communication technologies.

Reacting against 'Something Else'

Transgressing disciplinary boundaries... [is] a subversive undertaking since it is likely to violate the sanctuaries of accepted ways of perceiving. Among the most fortified boundaries have been those between the natural sciences and the humanities. (Greenberg, 1990)

Contemporary art practice, particularly utilising digital technology, is loaded with references to science, and this trend has taken root in cultural theory as well. In fact, an entire new field has been formed in the humanities: 'Science Studies'. One would think that this would allow for better communication between the sciences and humanities, but in general this does not appear to be the case at the present time. Some of the work coming out of science philosophy and theoreticians commenting on the scientific process has infuriated some scientists and actually deepened the gap of the 'Two Cultures'.

In 1996 Alan Sokal published an article in the American cultural-studies journal *Social Text*, a parody article entitled 'Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity'. The article is crammed with 'non-sensical quotations about physics and mathematics' by prominent French and American intellectuals such as Lyotard, Derrida, Irigaray, and Lacan. The text is full of references to scientists such as Heisenberg, Kuhn, Bohr, Harding, Bell, and Gödel and is indeed as difficult to read as any postmodern theory text can be. The references cited are all real, and all quotes are rigorously accurate; however, having been taken out of their cultural contexts and reframed, they do assume questionable meanings. According to Sokal it was meant as an experiment to test whether the bold assertion claiming that physical reality is at the bottom of social and linguistic construct (without evidence or argument) would raise eyebrows

among the editors. It did not. The editors trusted that the information in the essay, written by established scientists, would be an honest contribution and did not read carefully the erroneous information in the text. The debates sparked by Sokal's hoax have come to encompass a wide range of tenuously related issues concerning not only the conceptual status of scientific knowledge or the merits of French post-structuralism, but also the social role of science and technology, multiculturalism, and 'political correctness', the academic left versus the academic right, and the cultural left versus the economic left.

The text was followed by an entire book, *Intellectual Impostors,* which Sokal co-wrote with Jean Bricmont. In the book they exhibit incredible zeal and thoroughness in their effort to de-mystify these very famous authors. Perhaps the most impressive aspect of this hoax article turned into event and book is how much rigour the thesis delivered. One wonders if they actually had to put aside their own scientific research to write this book, which would indicate that this is much more than a hoax but something they felt was very important to deliver to the scientific community and the public at large. There is no question that the authors have done their homework and that their work has had a definite impact on The Two Cultures. Some of the fallout is positive in that it brought to surface and activated a dialogue that was simmering under the surface. The negative aspects are that the dialogue was coloured by controversy and was mostly argumentative, thus endangering the very fragile bridge between the humanities and sciences. Why was Sokal not flattered that science has a such a strong influence on contemporary philosophers, as Einstein was when he read Fuller's interpretation of the Theory of Relativity? We do get a clue that there is more at stake in *Final Theory* by Steven Weinberg:

> These radical critics of science seem to be having little or no effect on scientists themselves. I do not know of any working scientist who takes them seriously. The danger they present to science comes from their possible influence on those who have not shared in the work of science but on whom we depend, especially those in charge of funding science and on new generation of scientists. (Weinberg, 1992)

The philosophers Sokal and Bricmont attack are those working in theory of psychoanalysis, semiotics, or sociology and whose work is subject to innumerable analysis, seminars, and doctoral theses. It is important to note that there are no authors mentioned who are principally literary or poetic. Sokal and Bricmont do make a valid point when saying that the scientific terminology and fact were rather abused and consequently serving as a way to spread false information to the readers. Sokal assembled a list of quotations that showed this kind of handling of the natural sciences and circulated it to his scientific colleagues whose reaction were 'a mixture of hilarity and dismay. They could hardly believe that anyone – much less renowned intellectuals – could write such nonsense.' When the texts were shown to non-scientists, they needed to explain in lay terms why the said passages were 'meaningless'. One can only imagine the reaction of scientists when they read a quote from Lacan, who refers to the structure of the neutronic subject as exactly the torus (it is no less a reality itself) (p. 19); or from a passage by Kristeva, who states that poetic language can be theorised in terms of the cardinality of the continuum (p. 38); or Baudrillard, who writes that modern war takes place in non-Euclidean space (p. 137).

Using the Poetic License as a Tool

> No doubt the first act of the calculus consists of 'depotetentialisation' of the equation (for example, instead of 2ax – x2 = y2 we have dy/dx = (a – x/yu). However, the analogue may be found in the two preceding figures where the disappearance of quantum and the quantitas was the condition for the appearance of the element of quantitability. . . . (Deleuze, 1994, pp. 174-5) (Sokal p. 213)

What is important to note however, is that Sokal and Bricmont are much more tolerant with use of scientific terminology in context of art or science fiction:

> If a poet uses the words like 'black hole' or 'degree of freedom' out of context and without really understanding their scientific meaning, it doesn't bother us. Likewise, if a science fiction writer uses secret passageways in space-time in order to send her characters back to the era of the Crusades, it is purely a question of taste whether one likes or dislikes the technique. (Sokal, 1997, p. 8)

Clearly this points to a semi-favourable position for artists in relation to the sciences, particularly those working with technology. What complicates matters, however, is that many artists are inspired and interpret the very philosophers that are under attack from the scientific community [2]. What Sokal and Bricmont fail to notice is that absolutely all the authors mentioned in their book have become staple philosophers for artists working with media, particularly Deleuze and Guattari, to whom they dedicate an entire chapter analysing their misuse of scientific and mathematical terms. One could argue that Deleuze and Guattari utilise these scientific and mathematical terms in a distinctly metaphorical or philosophical senses, which would explain their vague or tenuous relationship to 'hard' scientific fact. This argument is lost, however, when one points to direct quotes and references out of a book on the theory of differential equations that uses terms such as 'singularity' and 'singular point' in a distinctly technical and mathematical sense. The terms are then used in their literal senses without any distinguishing between their use as such rather than in a metaphorical context, nor is there offered an explanation of how we might understand the relationship between literality and figuratation as such. (Sokal, 1997, p. 216) (Deleuze,1990, pp. 50, 54, 339–40n)

Sharing the Language: Collaboration

Perhaps the source of the communication problem can be traced to the fact that most of the philosophers under attack in the scientific community do not work closely with scientists and that scientists are equally isolated from the movements of philosophical thought and contemporary artistic expression. As long as the work does not have a reason to be located in a few disciplines simultaneously, room for misunderstandings will be ample. The work of artists working with technology demands interaction with scholars from a wide variety of disciplines such as computer science, social studies, philosophy, cultural studies. Bridging and synthesising many worlds while composing 'something else' becomes the art.

Notes

1. Representatives of the Third Culture according to Brockman are William C. Williams; Stephen Jay Gould; Richard Dawkins; Brian Goodwin; Stev Jones; Niles Eldredge; Lynn Margulis; Marvin Minsky; Roger Schank; Daniel C. Dennet, Nicholas Humphrey; Francisco Varela; Steven Pinker; Roger Penrose; Martin Rees; Alan Guth; Lee Smolin; Paul Davies; Murray Gell-Mann; Stuart Kauffmann; Christopher G. Langton; J. Doyne Farmer; W. Daniel Hillis. He first published a brief essay on the idea of the emerging third culture in September, 1991 in his journal, the Edge. Now online, he continues to promote this idea: www.edge.org/3rd_culture
2. See list of conferences that have been organised around discussions of the work of Deleuze and Guattari; lists.village.http://virginia.edu:80/~spoons/d-g_html/d-g.html For artists inspired by science: see Wellcome Trust's SCI~ART initiative, 1998 and Art and Science Collaborations, Inc. : www.asci.org

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The Posthuman Conception of Consciousness: A 10-point Guide

Robert Pepperell

It is clear that we are now experiencing social, technical and economic change at an historically unprecedented rate. Elsewhere I have described how I perceive the consequent shift in understanding as the *Posthuman Condition* (Pepperell 1995). There are several things that distinguish the Humanist era we are leaving from the Posthumanist era we are entering. Humanists, for example, regarded Homo sapiens as the highest point of evolution.

We are now aware that machines, bio-machines or genetically altered organisms with different, or superior, characteristics may supersede humans as we currently know them (Moravec 1988). One of the major concerns of posthuman theory is the way we might now think about consciousness, especially given the possibility that intelligence could emerge in non-human substrates. Whilst consciousness is inevitably a subject of considerable complexity and abstraction, I nevertheless believe it is possible to say some useful things about it. Here then are ten ideas that, collectively, outline the posthuman conception of consciousness.

1. *Consciousness is not restricted to the brain.* Virtually all researchers, philosophers and psychologists I have encountered in the field of consciousness studies assume that consciousness occurs in the brain (e.g. Searle 1984). Whilst I don't deny that the structure and operation of the brain plays a significant part in creating conscious activity, it cannot do it on its own. The reasons are simple and obvious – separate the body from the brain and consciousness ceases. No-one has yet demonstrated that a brain can think without being attached to the body. The belief that it can exist independently is often expounded in the 'brain in a vat' fallacy. This proposes that an isolated brain, artificially fed the same impulses as an in situ brain, would be conscious in the same way as the in situ brain. The proposition is false because it is not the brain in itself that is conscious, but the whole system of which it is a part. *Consciousness is the function of an organism, not an organ.*
2. *The human body is not separate from its environment.* Since the boundary between the world and ourselves consists of permeable membranes that allow energy and matter to flow in and out, there can be no definite point at which our bodies begin or end. Humans are identifiable, but not definable. Things around us, like food, air, light, smells and sounds are absorbed into our system, become part of us and are expelled. How can we define precisely what it, or isn't, part of us. The notion that each of us is a discrete entity can be called the 'boxed body' fallacy. This assumes that the human body has a fixed delimitation; the mind resides inside the brain, inside the walls of the box whilst the reality upon which mind reflects lies outside. The box is perforated to allow sensations to flow in and waste to flow out. According to this model, each side of the box is discrete and retains its own identity. Philosophers then argue about the relationship between the two sides: Can one really know what's outside the box from the limited data we receive? If not, where does that data come from, etc? All such questions are avoided if we simply accept the continuity between body and environment – dispense with the box! *Nothing can be external to a human because the extent of a human cannot be fixed.*
3. *Consciousness, body and environment are all continuous.* It follows from the previous two points that there is a continuity between the 'thinking being', the tissues in which the thoughts are manifest, and the world in which those thoughts and tissues exist. Just as the brain needs the body to create conscious activity, so the body needs the environment to create conscious activity. A body without an environment, like a brain without a body, ceases to function – consciousness stops. Not only does this mean that the environment is connected directly to our consciousness through the body, it also means that consciousness is connected directly to the environment. Ultimately they cannot be

separated. By a process of simple reasoning, using orthodox scientific facts, we have demonstrated that the phenomenon of consciousness is distributed throughout reality and not localised in the brain, or in part of the brain. Such a position is consistent with systems of thought that previously evolved outside Western Europe, namely Buddhism, Hinduism and Taoism. Although there are many differing strands within each tradition, there is a common acceptance of the continuity between mind, body and world and a consequence belief that consciousness pervades all reality (Watts, 1950).

4. *Consciousness emerges from specific conditions.* Imagine a kettle used to boil water. It consists of a vessel to contain the water, a heating element, electrical energy, a certain atmospheric pressure, gravity and the water itself. If you put all these things together in the right way you can, within a few minutes, produce the effect known as 'boiling'. But where is 'boiling'? It cannot be specified, isolated or confined to any part of that system. Boiling is a property that emerges from a specific set of conditions. The same is true of consciousness. Given the right combination of genes, tissues, nutrients, chemicals and environmental conditions the property we know as 'consciousness' emerges. We cannot precisely define what this quality is, where it occurs or how it might look in isolation from those conditions – *it is a consequence of all those conditions.* As with the kettle, if you remove any of the constituents the emergent quality evaporates.
5. *Everything is energy*. It would be consistent with what is understood about reality at the sub-atomic level to say that the smallest 'particles' known are actually fields of energy rather than 'solid' material (Davies & Gribbin, 1991). Therefore, it is plausible to think of everything in the known Universe as energy in various states of manifestation and transformation. Again, such a view would be in harmony with the world-view of those Eastern traditions already mentioned as well as some early Greek thinkers such as Heraclitus and Thales. The appearance of solid matter around us is a consequence of the way our perceptual apparatus apprehends the forms that energy takes – rocks, plants, sea, stars, etc. The illusion of separation between things results from a combination of:
    - The various manifestations and transformations of energy and,
    - The ways in which our sensory apparatus respond to the manifestations and transformations of energy.
6. *No things exist as separate things in themselves.* Although we are apparently surrounded by an infinite number of objects, shapes, colours, smells and sounds it is a mistake to believe that they are each intrinsically distinct from each other, a notion that many physicists accept (Bohm, 1980). It is clear that we are sensitive to certain structures or differences and become aware of them as 'things' in as much as they display difference from other 'things' around them. This does not mean that they are 'in-themselves' different, only that we perceive them to be so. For, although they may *appear* as separate, we construe such separations for our own convenience. In other words, the distinctions are arbitrary and contingent: *arbitrary* because, on close examination, the boundaries are always fuzzy; and *contingent* because, depending on context or viewing position, the boundaries can move. Because we divide the world up into things in our own minds, we then impose those divisions onto the world, as though they were always there. Then we say, 'We've discovered something!'

7. *Language divides us*. Humans have evolved a massively complex and sophisticated verbal facility. It passes to each successive generation, acquired by individuals mainly during the first five years of their development. Language operates by a process of fragmentation. That is, it conceptually breaks the world up into different 'things', each of which it refers to with discrete words. Thus, we tend to see the world in the way that we describe it, as a fragmented collection of 'things' rather than as a continuous whole. Perhaps the most significant distinction that language reinforces is the fragmentation between oneself and the rest of the world, thereby giving rise to the 'I' or Self by which one is distinguished from everything else.
8. *Language is not all of reality, but part of it*. The distinctions we make between things in the world, including the one between ourselves and the world, are illusory in as much as they arise through language. Nevertheless, they are still part of the reality we experience and are powerfully persuasive in creating the nature of that experience. The distinctions are real, inasmuch as they produce what we consciously experience, but they do not constitute, or account for, the whole of reality. Many philosophers (Plato, Kant, Hegel and Schopenhauer for example) have made the distinction between 'knowable' and 'unknowable' reality. In Kantian (and Phenomenological) terminology the distinction is made between the *phenomenon* (knowable to the senses) and the noumenon (unknowable to the senses). The posthuman conception of consciousness, by contrast, does not accept that such a distinction has any intrinsic value, except in as much as it is a product of fragmented human thought. For the posthuman, all of reality includes our thoughts about reality which are part of a continuous *phenoumenon*.
9. *Consciousness is the sum of all the distinctions we make through language*. The phenomenon we normally describe as 'consciousness', that is the everyday awareness of Self through which we verbally articulate our presence in the world, emerges through linguistic evolution. The sum of accumulated distinctions we impose upon reality generates a complex web of oppositions that we can endlessly recombine orally, imaginatively, poetically, artistically, and so on. This is what distinguishes human (linguistic) consciousness from other types, e.g. that of animals. There are certainly other types of awareness of existence that bypass or transcend this fragmented, linguistic kind. They are referred to by a variety of names – preconscious, unconscious, Samadhi, dreaming, intuition, instinct, and are mainly distinguished from everyday consciousness by their lack of verbal expression. It is through these types of non-verbal awareness we are able to 'know' aspects of reality that elude literal articulation and, hence, how we repair the rupture between 'knowable' and 'unknowable' reality. There are a number of techniques that can be employed to evoke these alternative states of conscious being and transcend the fragmented linguistic consciousness. Examples are hypnosis, ritual, relaxation, drugs, mediation and koans (Cleary, 1989).
10. *Culture is a way of defragmenting consciousness*. Although the human language facility is a very powerful tool for understanding and controlling aspects of reality, it does produce a distorted view of the world. As we have said, that view is necessarily *fragmentary*. The problem with a fragmented view is that it gives rise to all sorts of contradictions, oppositions, isolations and conflicts that we then try to resolve by re-uniting the fragments – a process we could call *defragmentation*. Having experienced the relative bliss

of an un-fragmented consciousness before birth and the acquisition of language, it might be that we wish to return to that ideal, defragmented state which is sometimes called 'Pure Existence' (Sekida, 1985). This is a state free from the anxieties and contradictions that linguistic consciousness produces. In addition to transcending fragmented consciousness through techniques already mentioned above, we have evolved ways of *defragmenting* it. This means drawing together connections between differing concepts and perceptions of reality to create a more unified experience of it – to create a sense of order. Examples would include instances of art, music, cinema, poetry, literature, mathematics and philosophy. Using devices of narrative, representation, temporal structuring, metaphor, logic and pattern each of these cultural forms presents disparate facts of existence as conceptually continuous. These practices can all be regarded as attempts to wrest a more coherent, unified discourse about reality from the confusion of fragmented consciousness.

Conclusion

The posthuman conception of consciousness resists the division and separation of reality into fragments of the kind often generated through Humanist approaches to modelling reality. Whilst we struggle to adopt this way of thinking at the beginning of the 21st Century we are reminded of the relevance, simplicity and coherence of much older thought systems that could provide guidance. Despite the power of language to 'divide and conquer' reality we are often left confused and alienated about our position in the world because of the inherently fragmented state of linguistic consciousness. Various cultural practices provide us with temporary release from this anxiety either by drawing connections between disparate fragments, or by transcending fragmented consciousness entirely.

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Robert Pepperell is an artist and writer who currently lectures in the School of Art, Media and Design at University College Wales, Newport.

Art, Technology, Consciousness

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Edited by Roy Ascott

Presenting the most up-to-date discussions at the intersection between Art, Technology and Consciousness, bringing a whole new set of perspectives to this complex and compelling field.

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Roy Ascott *is Director of CAiiA-STAR, Professor of Interactive Art at the University of Wales College Newport and Professor of Technoetic Art at the University of Plymouth.*

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