

Charles Whitehead

Cultural Distortions of Self- and Reality-Perception

Abstract: *This essay explores the cultural and political processes which shape human worldviews. I examine the functions, mechanisms, and consequences of cultural distortions of perception, and the evolution of the western scientific worldview from its ancient animistic roots. From the evidence reviewed here I infer that collective deceptions are endemic in human culture, that physicalism is a collective deception and that the 'hard problem' of consciousness, defined in physicalist terms, is a false problem.*

In previous papers (Whitehead & Turner, 2000; Whitehead, 2001-2010, in press, pending; Whitehead *et al.*, 2009) I have presented physical, biological, neurological, psychological, anthropological, and archaeological evidence which challenges core assumptions within the behavioural and other sciences, such as cognocentrism, genocentrism, and physicalism. In this paper I will give a fuller account of ethnographic and historic data in order to elucidate the cultural and political processes which shape human worldviews. The evidence supports a further and independent line of reasoning which points to the same conclusions as my previous work — namely, that collective deceptions are endemic in human cultures; that physicalism is a collective deception; and that the 'hard problem' of consciousness, defined in physicalist terms, is a false problem.

I examine the ethnographic data using an approach based on Tinbergen's four 'whys'. Nikolaas Tinbergen proposed that a full account of any biological trait must answer four quite independent

Correspondence:
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questions — what its function is (ultimate mechanism), how it is accomplished (proximate mechanism), how it evolved (phylogeny), and how it develops (ontogeny). Culture, however, is not exactly a ‘biological trait’ as intended by Tinbergen, since it is not reproduced genetically and does not die with the individual who possesses it. For this reason, in the case of culture, Tinbergen’s ‘phylogeny’ and ‘ontogeny’ are the same thing. An alternative view of ontogeny — how children acquire culture — is addressed by a considerable body of literature, including papers by myself (e.g. Whitehead, 2001), which I cannot review here. My essay is therefore divided into three parts:

First I will argue that cultural distortions of perception have an adaptive function related to large-scale human cooperation and the maintenance of social order. This equates to Tinbergen’s ‘ultimate mechanism’.

Secondly I will identify some ‘proximate mechanisms’ whereby cultural distortions are accomplished, with illustrative examples to show how powerfully and profoundly culture alters cognition. I pay particular attention to animistic societies for two reasons: firstly, because western readers will readily appreciate that certain animistic beliefs are counter-intuitive, counter-experiential, and counter-logical; and secondly, because all our ancestors were animists, and I do not think we can fully understand western culture, including western science, without digging into its ancient animistic roots.

This provides the theme for the third part of my paper, which outlines the way that our scientific worldview evolved from an animistic one — so completing Tinbergen’s set of questions as applicable to western culture, and helping to make clear some whys and wherefores of the collective deceptions which are responsible for a false problem of consciousness.

1. Ultimate Mechanisms:

Human cooperation and the maintenance of social order

Biologists, if they are honest, confess themselves baffled by human cooperation. According to selfish-gene Darwinism, only two kinds of within-species cooperation can evolve by genetic point mutations:

1. Kin-based altruism

It pays to help close kin because they carry many of the same genes as ourselves (Hamilton, 1964). Helping close kin, in effect, means helping your own genes survive into the next generation. An example of kin-based altruism is breast feeding in mammals. Note that, for a

biologist, 'altruism' need not be intentional or even conscious. Any process is 'altruistic' if it benefits the reproductive fitness of a recipient at a cost to the reproductive fitness of the donor. So even plants can (and do) demonstrate cooperation.

2. Reciprocal altruism

It also pays to help others if they can be relied on to help you in return on some future occasion (Trivers, 1971). Reciprocal altruism obeys the principle of 'I'll scratch your back if you'll scratch mine'. An example of this is blood-sharing in vampire bats (Dawkins, 1989). Vampire bats feed at night. When they return to roost at dawn some, having found a suitable victim, will be sated with blood, whereas others will still be hungry. These fasted bats beg from sated bats, who will regurgitate some of their ingested blood into the mouths of the hungry. However, donors bear grudges against recipients who fail to reciprocate on a future occasion, and will not feed them again.

Such biological altruism is, of course, ultimately selfish — donors are acting in the best interests of their own 'selfish genes'. Human cooperation, in contrast, is often selfless. For example, following the 9/11 terrorist attack, rescue workers risked — and lost — their lives attempting to rescue complete strangers from whom they expected nothing in return. Even the terrorists might be described as 'altruistic' in the sense that they willingly sacrificed their lives for a collective cause, though no doubt they expected a heavenly reward.

The selfless altruism shown by human beings cannot be entirely explained by selfish gene theory, though empathy appears to be a genetic adaptation. Anecdotal reports of dolphins, and a thirty-five year study of African elephants, suggest that both these species have empathy for distress in others (Bates *et al.*, 2008). Human empathy has a neurological basis in mirror neurones that fire, for example, when a person is in pain and also when a person sees another in pain (Singer *et al.*, 2004). Over and above this kind of empathy for feelings, humans appear to have evolved a remarkably thorough ability to identify with others. We care about what happens to the fictitious protagonists of novels and movies almost as though it were happening to ourselves, and if we despise others, our own self-respect is diminished. A possible explanation for this is the highly elaborated role-play which children engage in from around the age of two years. Young children pretend to be mothers, fathers, figures of fantasy or fiction, and virtually anything that moves — such as aeroplanes and railway engines.

What we know about empathy and identification with others, however, does not sufficiently explain generalised altruism in humans. In particular, large-scale cooperation is uniquely human and strongly suggests that human altruism depends on cultural scaffolding.

Can we identify those features of human culture which provide such scaffolding? I think we can. If biologists are correct in holding that kin-based and reciprocal altruism are the only forms of within-species cooperation that can evolve genetically, then it is surely no coincidence that all human societies are structured by formal systems of ‘exploded’ kinship and reciprocity.

Examples of supra-biological kinship include lineage clans (whose members have multiple ‘parents’, ‘siblings’, and ‘children’), nations, ethnic groupings, religious affiliations, and institutional memberships (ranging from football teams to armies). These all involve inflated or collectivized self-perceptions, and we commonly have multiple group memberships by which we more or less powerfully define ourselves.

Systems of formalised reciprocity include gift exchange, trade, marriage, and sporting contests. Even warfare exchanges like for like and has distinctly ritualized features. In battle, soldiers must assume a warlike *persona*, and we all change our personality to suit different exchange relationships with others.

Cultural systems are sustained by formal rules of morality or taboo — in effect, a ‘social contract’ — whose function is to curb or control our innate biological impulses, and which are reinforced by supra-personal or supernatural sanctions and obligations. Lives governed by obligatory rules and formal systems of affiliation and exchange require cultural distortion of the way we feel, perceive, and think about ourselves and the world we live in. At the dawn of human culture, that was the only way our selfish but social ancestors could be coerced into collaborating in a counter-instinctive system.

The maintenance of cultural systems, especially those which create inequities of wealth and power, also requires perceptual distortions. As French anthropologist Pierre Bourdieu put it: ‘Every established order tends to produce the naturalization of its own arbitrariness’ (1972, p. 164). Human cultures must be made to appear natural, inevitable, and right.

Bourdieu’s view was influenced by Karl Marx and Frederick Engels (1846). The ideology of any society, according to them, is always the ideology of the ‘ruling classes’ — disguising privilege and inequity as benevolence and justice. Such obfuscation of appearances they called ‘false consciousness’. Cultural falsifications are always political in origin — they are powerful tools of social control — and

all political systems generate the deceptions that are required to maintain and legitimate their own power and authority. Modern science — as a political institution dependent on public respect, independent funding bodies, and so on — has developed collective deceptions of its own (Whitehead, 2006a; 2008a), and this is the fundamental reason why scientists maintain physicalist beliefs despite the fact that physicalism cannot accommodate consciousness, and statistically compelling evidence that minds exert ‘paranormal’ effects incompatible with physicalism (e.g. Tart, 2009).

2. Proximate Mechanisms of Culturally Altered Perception

Habitus and techniques du corps

Bourdieu pointed out the ‘taken for granted’ way that culturally specific assumptions and beliefs are never critically examined, however logically contradictory and incoherent they may be. He also argued that the shaping of beliefs and attitudes involves far more than verbal influence or persuasion — our minds are shaped by the entire *habitus* of our way of life, including our material culture — the appearance and design of our houses, clothes, villages, and the objects we make, use, give to others, or trade (*cf.* Weisbuch & Ambady, 2008). These things, and the behaviour of those around us, condition our bodies to certain rhythms, postures, and mannerisms that contribute to our cultural temperament, attitudes, values, and *personae* (*cf.* Trevarthen, 1995). Such insights originated with Georg Hegel (1807), who held that ‘we become conscious through acting on the world’. Karl Marx and Frederick Engels (1846), influenced by Hegel, claimed that we become conscious through ‘the forces and relations of production’. The political and economic relations invoked by Marxian theory influence the multitudinous details of everyday life, including manner of dress and the way we present ourselves to others.

Altered self-perceptions begin with concealment of the genitals and suppression of ape-like sexual behaviour. Sexual modesty appears to be a cultural universal — even in the Kalahari Desert, where clothes can be uncomfortably hot, the Bushman wears a leather apron concealing the genitals and anus. Hiding the genitalia is perhaps the most fundamental example of a *technique du corps*.

Enculturated societies appropriate and fetishize bodies, socializing them in numerous ways. *Homo sapiens* is the only animal species which systematically alters its own bodily appearance and sensory qualities in so many culturally distinctive ways, and we do so with extraordinary ingenuity and artifice — including dress, self-adornment,

coiffure, cosmetics, body paint, soap, perfume, tattoos, cicatrisation (creating patterns of raised welts on the skin with tiny knife incisions), and sometimes gross and painful mutilation. Such *techniques du corps* are commonly used to forge collectivized identities such as clan membership or religious affiliation. People in post-industrial societies are no exception: the privileged — including politicians, lawyers, doctors, business entrepreneurs, and Mafia bosses — adopt ‘power dressing’, whilst under-privileged teenagers form rebellious ‘subcultures’, adopting styles of dress, appearance, and behaviour designed to outrage the ‘establishment’ or at least assert an independent sense of identity and validity.

Neural plasticity

Neuroscientists have only recently begun to study the effects of culture on the structure and functioning of the brain, but it is already clear that such effects extend to quite basic processes such as vision and motor skills (reviews: Turner & Whitehead, 2008; Chiao *et al.*, 2008). For example, judging the length of a line within a box involves a different pattern of activity in Asian and American brains (Chiao *et al.*, 2008). Asians are better at judging the length of the line relative to the size of the box, and Americans are better at judging the absolute length of the line, regardless of the box size. Another example is the way brains process faces. Looking at pictures of other people’s faces, and looking at pictures of your own face, have different neural signatures (*ibid.*). However, when Japanese people look at pictures of their mother’s face, or the faces of family members, they show a ‘my face’ brain response, whereas white Americans show an ‘other person’ response. These differences reflect western individualism contrasted with Asian collectivism.

Such findings should not surprise psychologists, who have been studying cultural influences on the mind and behaviour for decades. They have discovered, for example, that French babies, only four days old, have already learned to prefer the intonation of French over Russian voices (Mehler *et al.*, 1988). There are also culturally induced perceptual deficits: for example, between the ages of 6 and 10 months, Japanese babies lose the ability to discriminate between the phonemes /l/ and /r/ (de Boysson-Bardies, 1996).

All these findings reflect a phenomenon known as ‘neural plasticity’. Training and practice increase the area of neocortex devoted to the relevant functions, whereas unused brain areas tend to atrophy — following a Darwinian principle of ‘survival of the useful’ (Edelman,

1992; Plotkin, 1994). The brains of feral children (children raised by animals or otherwise deprived of normal human contact) show grossly diminished fronto-orbital circumference — presumably in consequence of disuse (Perry *et al.*, 1995).

Ethnographic examples of perceptual deficits

Anthropology provides many examples of culturally induced perceptual deficits. Anthony Forge (1970) discovered that Abelam children in New Guinea had no problem understanding photographs of themselves and of their friends and family, but adult Abelam men — after repeated initiation ceremonies in which they were exposed to vivid two-dimensional images of spirits (*tamburans*) — lost the ability to understand photographs. When shown a photograph, their immediate reaction would be to turn it over and scrutinize the back.

Roger Keesing (1982) found that the Kwaio in the Solomon Islands appeared unable to discriminate between the colours black and blue because, in Kwaio language, both share the same name (which we might translate as ‘dark’). Traditionally, the Kwaio paint their houses black, but when the anthropologist supplied them with blue paint, they used both colours indiscriminately, painting their houses in an ‘un-sightly’ patchwork. When asked why they did so, they denied this was the case, asserting that the houses were beautifully and uniformly ‘dark’.¹

There are also converse cases where indigenous people claim to perceive things which westerners of European descent cannot. Many Native Americans, for example, regularly hear spirit voices. Stanley Krippner (1999) recounts the case of a Native American woman who was unfortunate enough to encounter an anthropologically naïve psychiatrist, who asked the standard question ‘Do you hear voices?’ Of course the woman replied ‘Yes’. Among her people, everyone hears voices. The psychiatrist promptly committed her to an institution. Fortunately, she was able to escape because the spirit voices told her of a way out.

Australian aborigines apparently regard white people as perceptually deficient. Knight (1985) quotes from Ryan (1969, p. 45), a European adopted from childhood by Queensland Aborigines:

[1] I must thank one anonymous reviewer for drawing my attention to the Sapir-Whorf hypothesis, or linguistic relativity principle, which this Kwaio case illustrates. Most linguists now hold the view that language influences certain — but not all — cognitive processes in non-trivial ways (Koerner, 2000).

The first thing a blackfellow notices about a white man when he sees him for the first time is that he is deaf (*momba*), that he does not take notice of things around him, and he does not 'feel' anyone that is near him. His bodily senses have been out of use for so long that they do not function any more.

Fragmented selves

A particularly interesting case was reported by Maurice Leenhardt (1949), an early investigator of Melanesian personhood. Most westerners are pretty confident that they have bodies. What they are less sure about is whether they have a soul or spirit. Surprisingly, Leenhardt found that Melanesians have this the other way round — they are quite confident about spirit but not at all sure about their bodies. Following a discussion of the effects of colonialism with a New Caledonian sculptor, Boesou, Leenhardt remarked: 'In short, we introduced the notion of spirit to your way of thinking?'

'Spirit?' Boesou retorted, 'Bah! You didn't bring us the spirit. We already knew the spirit existed. We have always acted in accord with the spirit. What you've brought us is the body!'

It may seem surprising that a sculptor — whose job is to carve representations of bodies — should feel that bodies are not self-evident. Leenhardt linked this to the disarticulated sense of body revealed by New Caledonian body terms — and by the associated 'cubist' art which crystallizes bodies into angular fragments. He attributed this to a 'primitive lack of depth perception'. This interpretation is typical of anthropology at that time, but today we know that babies have fully functional depth perception from an early age. As soon as they can crawl, for example, they will not cross over a 'visual cliff' (Gregory, 1966, pp. 201–203). And there is clearly nothing 'primitive' about New Caledonian art. The first pictures spontaneously created by children — which might with some justification be thought of as 'primitive' — are relatively naturalistic. They are perhaps ideographic — a style which cartoonists wilfully imitate — but they do not show fragmented or disarticulated bodies. The same might be said of the very earliest human art, as seen in Upper Palaeolithic cave paintings. Here, animals are portrayed with perfect naturalism, although some features may be shown in 'skewed perspective' (e.g. an animal represented in profile may have antlers twisted as if viewed from the front, or hooves turned towards the viewer showing what kind of tracks they would leave: Bahn & Vertut, 1988). Leenhardt was probably nearer the mark when he hinted that ego boundaries are erased in ritual, 'when the time of the living being mingles with the time of the ancestors'.

Fragmented bodies also appear in the art of Northwest coastal America, where animals are regularly portrayed as though seen from several viewpoints simultaneously. Native American artists also often depict animals and plants with 'X-ray vision' — showing bones and muscles, or the hidden roots of plants. X-ray vision is one of the powers bestowed by shamanic trance, enabling the shaman to 'see' the cause of an illness, and 'extract' the noxious object — often a tiny claw, feather, or crystal — from the patient's body. Shamanic healing is not entirely innocent of deception — the item to be extracted being secretly palmed by the shaman before healing begins. Nevertheless, such healing is often effective.

Fragmented art styles such as those of Melanesia and elsewhere were briefly imitated by Picasso and Braque during their cubist period, though with little ethnographic insight — Picasso thought he was learning to paint 'like a child'. Westerners have regularly misperceived preliterate cultures as 'childlike' or 'primitive'. As I have noted, children do not produce such art and it certainly cannot be regarded as 'primitive' — rather, it represents a sophisticated and systematic assault on perceptions of bodies. Wherever we have 'Art' with a capital 'A' — especially on the monumental scale seen in Northwest coastal America, European cave art, and many western art galleries and municipal spaces — it is inevitably political, inextricably entangled with issues of class, power, authority, and prestige.

Paul Radin (1956), in his classic study of Native American Trickster myths, rather like Leenhardt, interpreted such myths as evidence of 'primitive thought', equating cultural evolution with psychological maturation. He described the Winnebago Trickster Cycle as a progression from an infantile to a more rational and mature state. But Freud and Piaget, whose theories were current at the time Radin wrote, describe maturation as proceeding from an unbounded state of 'primal omnipotence' (i.e. the baby lacks ego boundaries, taking itself to be all that exists). Gradually, the infant learns to discriminate between 'me' and 'not me', and eventually achieves a mature adult state with well-defined ego boundaries. In contrast, the Winnebago Trickster suffers from a surfeit of boundaries from the outset. His left hand fights his right hand. He carries his detached genitals in a box, or winds his enormous penis around his waist. When he sees, across a river, a bevy of beautiful girls playing on a swing, he sends his penis swimming across the river to copulate with them. He roasts his intestines, mistaking them for sausages, and sets his anus to guard the cooking while he sleeps. When he wakes to find the 'sausages' burnt, he punishes his anus with a firebrand. Similarly grotesque and

scatological tales are found among the Bushman (Bieseke, 1993). They are regarded as raucously funny — but at the same time powerfully sacred. If Native American Trickster tales are told by the wrong person or at the wrong time, the universe, it is believed, would collapse.

Trickster tales appear to be a cultural universal, and they are intimately related to origins myths. The Trickster was there ‘when the rules were written’ (Sherman, 1990). He is the quintessential image of fragmented personhood and paradox — simultaneously animal and human, cunning and stupid, sacred and profane, powerful and inept, subhuman and superhuman (Welsch, 1990). In all Bushman languages, God and the Trickster share the same name, though they are at opposite poles of the supernatural realm. Motivated by nothing but greed, curiosity, and lust, the Trickster — for all the wrong reasons — is the culture hero who created everything necessary for human cultural order (Sherman, 1990; Bieseke, 1993, p. 106). The ubiquity and paradoxical character of Trickster figures suggest an origin in the ‘anti-structural’ liminal phase of ritual (Turner, 1982), and the categorical inversions and connotations that occur in altered states of consciousness (Ludwig, 1969), possibly implicating ritually-induced trance states.

Maurice Leenhardt (1949) was one of the first to report that New Caledonians seem to have no intrinsic *ego* — their sense of self is multiple, defined by multiple exchange relationships, as the hub of a wheel is defined by its spokes. We all adjust our persona to suit the different reciprocal relationships we have with others, and the complexities of gift exchange systems in Melanesia and elsewhere make quite exacting demands on participants, requiring pronounced shifts in personal attributes and attitudes.

In a comprehensive analysis of Melanesian ethnography, Marilyn Strathern (1988) was much influenced by the Marxian theory that selfhood is created by the ‘forces and relations of production’, and by numerous examples of reified metaphor collected by Marcel Mauss (1925) in his classic study of gift exchange. Mauss showed that gifts are literally identified with the giver, and ‘useless trade goods’ — such as Kula necklaces and arm shells or Potlatch blankets and coppers — are regarded as articulate persons with personal names, and minds and emotions of their own. In Melanesia, the equation of people with things and things with people, Strathern concluded, creates ‘partible personhood’ and dissociable gender.

Inflated selves

One of the conundrums of anthropology is the apparent incompatibility of Leenhardt's fragmented body images or Strathern's 'partible persons' with the inflated self-representations noted by others. Johansen (1954), for example, observed that Maori chiefs would recount the history and doings of their people, or their myths of origin, using the first person singular throughout. Rather than saying 'My people came to New Zealand in the *Tainui* canoe' a chief would say 'I came to New Zealand in the *Tainui* canoe'. Similarly, he would say 'I drew up New Zealand from the bed of the ocean with my fishhook', when everyone would know that this deed belonged to the culture hero, Maui. Marshal Sahlins (1981, p. 13) called this the 'heroic I' and noted the same phenomenon in Tonga, Fiji, Nigeria, and northern Zimbabwe, suggesting that this inflated sense of self is, or was, far more widespread. Marcel Mauss marshalled considerable evidence that inflated or collectivised selves were a widespread feature of societies with classificatory kinship and economic systems based on gift exchange. Gifts were regularly given by collectivities of people, and the chief in particular represented the entirety of his people, including long dead ancestors and as yet unborn children.

A parallel phenomenon was described by Louis Dumont (1980), who argued that all 'holistic hierarchies' (such as that of the Roman Catholic church) are characterised by notions of 'encompassment'. In the Hindu caste system, the Brahmans and Kshatriyas (priests and warrior aristocrats) represent 'the whole' of society, whereas the lower castes — the Vaishyas, Shudras and Untouchables — represent 'the parts'. Dumont believed that hierarchy is natural to our species (which he dubbed *Homo hierarchicus*) and necessary for healthy human functioning. However his observations seem more consistent with Marxian 'false consciousness' — encompassment would seem to legitimate inequity, presenting exploitation as 'cooperation' and subjection as 'fair exchange' — making it seem natural and inevitable that 'the parts' should serve 'the whole' in return for spiritual and military 'protection'. From internal evidence in the *Rig Veda*, cited by Dumont himself (1980, p. 69), it seems likely that the caste system resulted from a succession of armed conquests, with the lower castes representing the most recently subjugated populations.

The role of ritual trance

Ethnographic evidence of the kind discussed above suggests that human cultures not only have the power to create perceptual deficits

and other mental and neurological changes, but may also generate disarticulated body images, and selves which are simultaneously fragmented and inflated. Fragmented self-perceptions appear to be associated with the multiple roles and reifications involved in economic relationships, and dislocated ego boundaries with classificatory kinship and collectivised identities. A fairly standard anthropological view would attribute the primordial origins of gift exchange and kinship systems to ritual, and there is no doubt that rituals are commonly associated with sometimes dramatic alterations in consciousness. Ritually induced states of consciousness may have been a significant factor in the origins of culturally modified self-perceptions.

A suggestive series of experiments in this regard was conducted by Richard Katz (1982) among the Kalahari !Kung (Bushmen). He compared 16 healers (men who enter ritual trance at least once a week) with 16 men, matched with the healers for age, who never entered trance.

Thematic Apperception and Personality Tests indicated that healers had much richer fantasy lives than non-healers, and were more emotionally labile. Healers themselves 'emphasize the central importance of fluid psychological processes and transitions, that break out of the body's ordinary anatomical boundaries' (Katz, 1982). It could be argued that these differences in healers may have predisposed them to trance, as opposed to being the result of trance. However, half the healers were aged over 40 and very experienced, whereas half were younger and inexperienced. The differences were more marked in the mature than the inexperienced healers, suggesting that trance did indeed lead to changes in personality and cognition.

The third 'draw a self-portrait' test was especially revealing. The non-trancers produced matchstick figures complete with head, trunk, arms and legs, as might be expected from anyone with no previous experience of drawing. Mature healers, however, produced fragmented or multiple self-images. Katz shows three of these in his book (*Boiling Energy*, 1982). None have legs, only one has a head, and one has no appendages of any sort, consisting only of three parallel spirals. All three drawings have spiral devices detached from each other and, where present, from the 'main body'. The experienced healer Kinachau drew a series of parallel spirals, which he said are 'my body', alongside a longer spiral attached to a pair of upraised arms, which he said is 'my spinal column'. Katz compares the spirals to the 'boiling *n/um*' energy which, like the Kundalini serpent, resides in the sacrum bone and rises up the healer's spine during trance dancing. When this *n/um* energy reaches the skull, the dancer 'dies' and enters

trance, and so acquires supernatural powers, such as the ability to see sickness inside people, to see events at a distance, find game, and to ascend to the sky in order to confront God face-to-face. Representing the spine in a self portrait suggests the X-ray vision typical of shamanic art.

Human/animal transformation

Transformations of the self are at the root of some of humanity's most ancient dreams and nightmares. Animal transformations — or shape shifting — originate in the perspectival beliefs common to many animistic peoples. *Animism* is the belief that non-human agents — such as animals, plants, spirits, natural phenomena, or human artefacts — are intelligent and articulate *persons*, with thoughts and feelings like our own. *Perspectivism* is the belief that these agents are not only human-like, but see themselves and the world from a human perspective (Viveiros de Castro, 1998). So, a beaver living in its lodge will see itself as a human being living in a human village, with a chief, shaman, exogamous clans, and religious ceremonials. Animals see their teeth or claws as human tools or ritual paraphernalia, and their fur or feathers as ceremonial costume. A jaguar lapping the blood of its prey sees itself as a human drinking manioc beer — fermented, enculturated drink. A vulture eating rotten meat sees maggots as grilled fish — cooked, enculturated food. And just as they see themselves as human, they see us as non-human, and their perception depends on who eats whom. Jaguars and spirits eat humans, so they see us as white-lipped peccaries — animals that humans eat. White-lipped peccaries, on the other hand, will see us as jaguars or spirits.

These perspectival views are not simply regarded as appearances, but as *actualities*. Multiple observers live in parallel worlds which are all equally real. All agents live simultaneously in all these worlds, where they will be human, spirit, carnivore, or prey animal, according to the predatory or non-predatory relations between the agent and the denizens whose perspective creates that particular world. Curiously, even human others — such as affinal clans and enemies — are regarded as 'animal' (and sexual relations between them as 'carnivory'), and in ritual, everyone becomes 'other', being transformed into animals or transported to the times of cultural origins (when everyone spoke 'the language of animals'). Reified metaphors and connotations of identity are ubiquitous in ethnographic literature and characteristic of animistic thinking. Sex is equated with eating, women with meat, and

incest with cannibalism. The incest taboo equates with the hunter's 'own kill rule' (forbidding a hunter to consume meat he has killed himself) — both prohibit 'eating your own blood' (Knight, 1991).

Perspectival beliefs are commonly associated with the logically contradictory belief that animals are really humans wearing animal suits — hence all consumption of meat is 'cannibalism' (Viveiros de Castro, 1998). This belief persists in hunting peoples who regularly butcher meat. They never find the human being inside there, and it doesn't matter how big or small the animal is. It seems that the animal costume alters the body entirely and all the way through to the bones. Consequently, when a human dons an animal mask or costume during ritual, the human *becomes* the animal portrayed. Masks do not conceal identity — they create it.

One of the deepest supernatural fears of hunting people is of meeting, in the forest or wilderness, an animal which is not wearing its animal suit (*ibid.*). If the animal greets the human, and the human — mistaking it for a fellow human — replies, then the human will be transformed into the same species as the animal. Apparently, shape-shifting is not regarded as something miraculous, requiring magical effort to accomplish, but as something natural that may require magic or at least vigilance to guard against it. Animal disguise in ritual, associated with belief in animal transformation, is widespread, and suggests profound instabilities of body image and self-perception. Perspectivism denies any essential self and the substantiality of the body — embodied realities are created by surface appearances, from the outside in, and you can change your own reality as easily as changing your hat.

The outside-in identities of perspectival world-views cannot be regarded as 'primitive' or 'natural'. Cognitive anthropologists have shown that children in very different cultures develop, at similar ages, almost identical intuitions about animals, plants, people, natural objects, and human artefacts (Atran, 1990), which would seem to preclude any possibility that animism is 'natural' or 'primitive' (Boyer, 1996). For example, four year-old children from various cultural backgrounds know the difference between appearance and reality, and have an *essentialist* concept of living kinds (Flavell *et al.*, 1983; Gopnik & Astington, 1988). They know that you cannot turn a lion into a tiger by shaving off its mane and painting it with stripes, and even three year-olds tend not to accept that dressing a horse in a zebra suit turns it into a zebra (Keil, 1988). Shape-shifting by costume change, a common feature of animistic belief systems, implicates a *non-essentialist* perception of animal and human bodies.

Ritual transformations of humans into animals appear to be very ancient. Composite human-animal figures first appear in the earliest European art (Bahn & Vertut, 1988). A bison headed human figure, apparently playing a musical bow, is engraved on the wall of the *Trois Frères* cave in Ariège. The ‘sorcerer’ from the same cave is a painted and engraved figure with human-like body, antlers, a tail, and animal-like posture. Both figures probably date from the Magdalenian or Solutrian period, between ten and twenty thousand years ago. An ivory statuette of a lion-headed man comes from Hohlenstein-Stadel in Germany, and is around 30,000 years old. It belongs to the Aurignacian period — the oldest known European culture of modern type.

More certain evidence of perspectival beliefs comes from European folklore, which includes countless tales of talking animals and human-animal transformation. Many of these tales have close parallels throughout the Old and New Worlds. In the seventeenth century, witches were often accused of transforming into animals; and beliefs in vampires, werewolves, and — in the Scottish isles — silkies, survived well beyond the Middle Ages. Silkies are seals which, at full moon, emerge from the sea, shed their seal suits, and dance on the beach — often in the form of beautiful naked girls. If a man steals one of their suits, he can force the girl to marry him. But if she ever finds her seal suit, she will return to the sea and be lost to him forever. Perspectival notions live on today as we give our children animal toys which are treated as human, and tell them traditional tales of animals behaving like humans, princes transformed into swans or ravens, or frogs that change into handsome princes or beautiful princesses. Hollywood screen writers still consciously mine ancient folklore to generate ‘new’ themes of fantasy and horror.

In sum, we have seen that human cultures have the power to create perceptual deficits, disarticulated body images, selves which are simultaneously fragmented and inflated, and profoundly unstable perceptions of a fluid and disembodied self. There may be causal links between the role-play involved in economic relationships and fragmented self perceptions; and between collectivised self-perceptions, and inflated or disrupted ego boundaries.

3. Evolution of Western Culture and the Political Origins of the ‘Hard Problem’

It would seem that western culture has evolved through a series of reactions against a formerly perspectival world-view. In classical Greece and Rome, evidence of perspectival ‘inside-out’ self

perceptions can be found in attitudes to theatrical masking (Napier, 1985). It was considered essential for an actor to wear a mask in order to transform his identity for the stage. Aristotle, in his profound analysis of drama, never questioned the necessity of masks. The Greek word *prosopon* and the Latin *persona* both had wider meanings than any equivalent word today — making no linguistic distinction between mask, manifestation, face, figure, part in a play, and person.

Early evidence of a rejection of perspectival ontology comes from Exodus, after the Israelites were released from slavery in Egypt, where they developed an abhorrence of Egyptian idolatry and magic. The second commandment given to Moses proscribed the creation of graven images, presumably because of the dangers of conflating appearances with reality. So Judaism took a step towards restoring an essential sense of self, a process which was taken further in Christian ontology.

The Roman Senate was willing to welcome the Christian God into its ever-expanding pantheon, until it was realized that Roman and Christian ontologies were incompatible. Christianity — a passionately monotheistic faith — denied the determinative power of appearances, including the trappings of social rank (Napier, 1985). Slaves could be more divinized than Caesar; bread and wine became flesh and blood with no change in perceptible properties; and 'grace' transformed the essence of a person with no need for masks and costumes, and no change in outward appearances. The deep hostility of the early Church to theatre reflected a profound incompatibility of ontologies relating to the status of representation and appearances.

Christianity created an interior rather than exterior sense of self. But it would seem this essential self was of the spirit rather than the body. Matter itself remained insubstantial.

Medieval medicine retained the Galenic notions of four qualities, elements, humours, and temperaments, along with alchemical beliefs in transmutable matter and immortalizable bodies. Joseph Needham (1974) suggested that alchemy originated in China, and compiled a list of Chinese emperors who probably died as a result of testing elixirs of immortality — frequently including mercurial and arsenical compounds. The Graeco-Vedic theory that all matter was composed of four elements — air, fire, earth, and water — which in turn were combinations of four 'qualities' — hot, cold, wet, and dry — meant that medieval thought lacked any concept of a permanent or stable substance.

Alchemy, however, was a major influence on western science. The very idea of observation, investigation, and experiment, was largely

foreign to classical Greek thought, which treated oratory and reasoning as a kind of competitive sport. Research laboratories together with the flasks, retorts, crucibles, and other equipment found in laboratories to this day, were first built, made, and used by alchemists.

The rise of Islamic power led to the rediscovery — in twelfth century Europe — of classical Greek as opposed to Latin science, mathematics, and philosophy. Following the conquest of Constantinople by Ottoman Turks in 1453, Byzantine scholars began to arrive in Italy and elsewhere, bringing long-forgotten works of Greek literature, oratory, theology, and history. Combining with a complex mix of other influences, this seems to have been the triggering factor for the European Renaissance, marked by a growing interest in ancient Greek culture, the rise of humanism, and — in art — an increasing focus on realism and human emotion.

As a result bodies became more substantial. Artists — emulating the anatomical realism of classical art — began to dissect bodies and study anatomy. The most distinguished Renaissance anatomist — Andreas Vesalius — published his work *De Humani Corporis Fabrica* in 1543, the same year that Nicolaus Copernicus published *De Revolutionibus Orbium Coelestium*. The universe was becoming less anthropocentric, and the medieval notion of humanity as Microcosm and the universe as Macrocosm — both being images of God and of each other — was being undermined from both ends.

Renaissance art represents a revolutionary departure from the holistic vision of the Middle Ages. In a special issue of *JCS* on 'Art and the Brain', Ramachandran & Hirstein (1999) compared a drawing of a horse and rider by Nadia, an autistic 5-year-old, with one by Leonardo da Vinci. In the same issue, Nicholas Humphrey used Nadia's drawings to argue that the cave artists of the Upper Palaeolithic were probably 'autistic'. Palaeolithic artists, however, did not draw with foreshortening and perspective, as did Nadia and da Vinci. The cave art also features a variety of conventional glyphs such as techtiforms ('huts'), claviforms ('clubs'), scutiforms ('shields'), 'aviforms' ('birds'), and penniforms ('feathers'). These are two to three times more numerous than the animal and other figurative images that so impress modern visitors (Bahn & Vertut, 1988). Conventionalised graphics indicate a shared culture. There is no doubt that the Upper Palaeolithic represents the first arrival of modern culture in Europe, and it is inconceivable that the ritual, rules, language, and sophisticated social controls that characterize human culture could have been created by mind-blind people. Nadia's drawings are far more similar

to those of Leonardo da Vinci, and it would be more logical to conclude that Leonardo was ‘autistic’.

Why did it take European artists tens of thousands of years to discover perspective and foreshortening, when autistic prodigies use them spontaneously? A possible explanation could be that such optical effects are egocentric, and so dependent on the unconscious dorsal visual stream (Goodale & Milner, 1992). The ventral stream sees a world that is shared or shareable with others, and so is conscious — a world less accessible to those with autism. If anything, these drawings suggest that Renaissance rather than Palaeolithic artists had autistic tendencies. As bodies were becoming more physical, they were also becoming less social and more individualistic.

The Alchemical belief in the mutability of matter, however, survived until the time of Robert Boyle. A fully physicalist world view did not emerge until the seventeenth century, and — like all collective deceptions — its origins were political (Jordanova, 1980; Whitehead, 2002; 2006a). Until the Enlightenment, the Christian Church in Europe held a monopoly on the Truth market. So Enlightenment scientists — most of them aristocrats — had to establish a domain where scientists could claim authority for Truth, rather than clergymen. In effect, you had two groups of dominant males contending for power. Hence there had to be a mechanistic world which could only be investigated by observation and research, as opposed to an historic revelation preserved by tradition. Physicalism is a product of this conflict of authority, rather than a necessary condition of science. The common-sensical way in which scientists today imagine that physicalism is self-evidently true, requiring no critical examination, is characteristic of collective deceptions more generally (Bourdieu, 1972).

The mechanistic views of Enlightenment science, however, provoked opposition not only from the Church, but also from many intellectuals, artists, philosophers, and even scientists. Physicalism threatened to reduce human beings to automatous zombies, with no possible role for consciousness and free-will (Morris, 1987). This provoked a reaction of abhorrence, the Counter-Enlightenment — a precursor of the Romantic movement — and the twin horns of an ontological dilemma. On the one hand, physicalism threatens to reduce humans to the level of unconscious automata, on the other idealism threatens to remove humanity from the realm of explanatory science altogether. Hence the two poles of belief in Western thinking studied by Imants Barušs (2008), and, of course, the ‘hard problem’ of consciousness.

The industrial revolution probably completed the process — mechanizing bodies, disembodiment of minds, and banishing ‘spirit’ to the outer fringes of reality. Industrial employment creates a mechanistic alternation between ‘work’ and ‘leisure’.

Religion, if practised at all, has become a ‘leisure’ activity, and ‘play’ has become the opposite of ‘work’ (Turner, 1982). Modern educators know that play is essential for healthy child development, but they still think that the sooner children start ‘working’ the better (OFSTED, 1999). Post-industrial children are given mechanical toys to play with; and because children will role-play anything that moves, they spontaneously pretend to be cars, aeroplanes, railway engines, and robots. Although Thomas the Tank Engine is an animistic hero, identification with machines can only serve to consolidate our mechanistic and asocial world-view.

Western individualism denies the social foundation of selfhood, averring what Louis Dumont (1986) called ‘the independent, autonomous, and thus essentially non-social moral being’. This is culturally aberrant, self-contradictory, and legitimates an ideology of ‘freedom’ which defends private wealth accumulation and social inequity, surrendering us to a competitive demand for ‘economic growth’ which creates unprecedented social alienation, worldwide poverty, pollution, and destruction of the environment.

Concluding Remarks

David Chalmers (1995), presenting his seminal definition of the ‘hard problem’ (how does consciousness arise from physical processes?) notes that it is ‘hard’ in the special sense that we cannot currently see any way in which a conventional scientific approach could explain it, or even be sure that we would recognise an explanation if we had one. When an idea ties the mind in knots in this way, leaving it not knowing which way to turn, this should be enough to persuade any reasonable person that there must be something wrong with the idea. For those who are not so convinced, the simple fact that physicalism cannot accommodate consciousness must cast some doubt on its conceptual validity. Chalmers himself notes that physicalism assumes a self-contained reality which, at least in principle, can be entirely explained without reference to consciousness. The idea of the ‘physical’ is self-contradictory, being overtly defined as ‘everything except consciousness’, but covertly thought of as ‘everything real’.

The hardness of the hard problem is conventionally explained by a factitious distinction between ‘first person’ and ‘third person’

perspectives. This too is a self-contradictory idea which follows from physicalism, being a product of the same seventeenth century political conflict, and the idiosyncratic invention of René Descartes, who allowed only a tenuous link between mind and matter via the pineal gland. How can third persons confirm the reality of the world outside your mind unless you have already confirmed its reality for yourself — along with the reality of the third persons who live in it?

The social nature of human beings suggests that some premonition of ‘other people’ may be an innate feature of the human mind, and Colwyn Trevarthen (1998) has presented empirical evidence supporting this view. The social nature of self-consciousness also implies that *reflective* awareness of your own mind, other minds, and the world outside the mind, are all equally products of third-person intersubjectivity. Our observations of mental phenomena and physical phenomena involve mental models of mental experiences to exactly the same degree, which means that there is no ‘special problem’ relating to consciousness. If I cannot ‘prove’ that your qualia are the same as my qualia, then I am likewise unable to ‘prove’ that your observations of anything are the same as mine. When a philosopher says ‘qualia’, the first thing that pops up in many minds is colour. That is because modern languages have a neat set of colour terms, though it is far more limited than the variety of hues we can actually distinguish. But for the vast bulk of sensory data processed by the brain — such as the multitudinous varieties of shape, texture, inclination, movement, slipperiness, knobblyness, and so on — we do not have even the limited vocabulary available for colour. Rather like the Kwaio, we fail to ‘see’ the qualia we cannot name. All observations are made up of qualia, and the assumption of parity is equally reasonable (or not) in all cases. Dividing ‘consciousness’ from ‘the rest’ of experience — as though that isn’t conscious — and then attributing the problem to consciousness alone, is a Cartesian red herring (or maybe, for some people, a blue herring).

In this paper I have presented evidence that collective deceptions are endemic in human cultures; that physicalism is a collective deception; and that the ‘hard problem’ of consciousness, defined in physicalist terms, is a false problem. At the same time I am aware that the very forces I describe will make it difficult or impossible for many people to accept my argument. Consequently, I can only address my remarks to those who are already questioning or have rejected physicalism, and those who are new to academia and have not yet made intellectual or career commitments to physicalist theories.

The great benefit of culture is human co-operation and transcendence over the ‘tyranny of selfish genes’. But the costs of culture include denial of human realities, insatiable economic demands, and a false worldview — including physicalism, and the ‘hard problem’ of consciousness. Of one thing we can be tautologically certain — no explanation of the universe can be complete unless it takes account of everything in it, including consciousness. Unless of course I got that the wrong way round, and should have said no explanation of consciousness can be complete unless it takes account of everything in it, including the universe.

References

- Atran, S. (1990) *Cognitive Foundations of Natural History: Towards an Anthropology of Science*, Cambridge: Cambridge University Press.
- Bahn, P.G. & Vertut, J. (1988) *Images of the Ice Age*, Oxford: Facts On File.
- Barušs, I. (2008) Beliefs about consciousness and reality: Clarification of the confusion concerning consciousness, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 277–292, Exeter: Imprint Academic.
- Bates, L.A., Lee, P.C., Njiraini, S., Poole, J.H., Sayialel, K., Sayialel, S., Moss, C.J. & Byrne, R.W. (2008) Do elephants show empathy?, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 204–225, Exeter: Imprint Academic.
- Bieseke, M. (1993) *Women Like Meat: The Folklore and Foraging Ideology of the Kalahari Ju/'hoan*, Bloomington & Indianapolis, IN: Witwatersrand University Press/Indiana University Press.
- Bourdieu, P. (1977 [1972]) *Outline of a Theory of Practice* (trans. R. Nice), Cambridge: Cambridge University Press.
- Boyer, P. (1996) What makes anthropomorphism natural: Intuitive ontology and cultural representations, *Journal of the Royal Anthropological Institute*, **2** (1), pp. 83–97.
- de Boysson-Bardies, B. (1996) *Comment la Parole Vient aux Enfants*, Paris: Editions Odile Jacob.
- Chalmers, D. (1995) Facing up to the problem of consciousness, *Journal of Consciousness Studies*, **2** (3), pp. 200–219.
- Chiao, J.Y., Li, Z. & Harada, T. (2008) Cultural neuroscience of consciousness: From visual perception to self-awareness, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 58–69, Exeter: Imprint Academic.
- Dawkins, R. (1989) *The Selfish Gene*, Oxford: Oxford University Press.
- Dumont, L. (1980) *Homo Hierarchicus: The Caste System and its Implications*, Chicago, IL: University of Chicago Press.
- Dumont, L. (1986) *Essays on Individualism: Modern Ideology in Anthropological Perspective*, Chicago, IL: University of Chicago Press.
- Edelman, G.M. (1992) *Bright Air, Brilliant Fire: On the Matter of the Mind*, London: Penguin.
- Flavell, J.H., Flavell, E.R. & Green, F.L. (1983) Development of the appearance-reality distinction, *Cognitive Psychology*, **15**, pp. 95–120.
- Forge, A. (1970) Learning to see in New Guinea, in Mayer, P. (ed.) *Socialization: The View from Social Anthropology*, pp. 269–291, London: Tavistock Press.

- Goodale, M.A. & Milner, A.D. (1992) Separate visual pathways for perception and action, *Trends in Neuroscience*, **15**, pp. 20–25.
- Gopnik, A. & Astington, J.W. (1988) Children's understanding of representational change and its relation to the understanding of false belief and the appearance-reality distinction, *Child Development*, **59**, pp. 26–37.
- Gregory, R.L. (1966) *Eye and Brain: The Psychology of Seeing*, London: Weidenfeld & Nicolson.
- Hamilton W.D. (1964) The genetical evolution of social behaviour I and II, *Journal of Theoretical Biology*, **7**, pp. 1–16 and 17–52.
- Hegel, G.W.F. (1977 [1807]) *Phenomenology of Spirit* (trans. A. Miller), Oxford: Oxford University Press.
- Humphrey, N. (1999) Cave art, autism, and the evolution of the human mind, *Journal of Consciousness Studies*, **6** (6-7), pp. 116–123.
- Johansen, J.P. (1954) *The Maori and His Religion*, Copenhagen: Munksgaard.
- Jordanova, L.J. (1980) Natural facts: A historical perspective on science and sexuality, in MacCormack, C. & Strathern, M. (eds.) *Nature, Culture and Gender*, Cambridge: Cambridge University Press.
- Katz, R. (1982) *Boiling Energy: Community Healing Among the Kalahari !Kung*, Cambridge, MA: Harvard University Press.
- Keesing, R.M. (1982) *Kwaio Religion: The Living and the Dead in a Solomon Island Society*, New York: Columbia University Press.
- Keil, F. (1988) Intuitive belief systems and informal reasoning in cognitive development, working paper, Department of Psychology, Cornell University.
- Knight, C. (1985) Menstruation as medicine, *Social Science & Medicine*, **21** (6), pp. 671–683.
- Knight, C. (1991) *Blood Relations: Menstruation and the Origins of Culture*, New Haven, CT & London: Yale University Press.
- Koerner, E.F.K. (2000) Towards a full pedigree of the Sapir-Whorf Hypothesis: from Locke to Lucy, in Pütz, M. & Verspoor, M. (eds) *Explorations in Linguistic Relativity*, pp. 1–24, Amsterdam: John Benjamins Publishing Company.
- Krippner, S. (1999) The varieties of dissociative experience: A transpersonal, postmodern model, *The International Journal of Transpersonal Studies*, **18** (2), pp. 81–101.
- Leenhardt, M. (1979 [1949]) *Do Kamo: Person and Myth in the Melanesian World*, Chicago, IL: University of Chicago Press.
- Ludwig, A.M. (1969) Altered states of consciousness, in Tart, C. (ed.) *Altered States of Consciousness: A Book of Readings*, pp. 9–22, New York: Wiley.
- Marx, K. & Engels, F. (1974 [1846]) *The German Ideology*, London: Lawrence & Wishart.
- Mauss, M. (1967 [1925]) *The Gift: Forms and Functions of Exchange in Archaic Societies* (trans. W.D. Halls), London: Norton reprinting by Routledge.
- Mehler, J., Jusczyk, P.W., Lambertz, G., Halsted, N., Bertocini, J. & Amiel-Tyson, C. (1988) A precursor of language acquisition in young infants, *Cognition*, **29**, pp. 143–178.
- Morris, B. (1987) *Anthropological Studies of Religion*, Cambridge: Cambridge University Press.
- Napier, A.D. (1985) *Masks, Transformation, and Paradox*, Berkeley, CA: University of California Press.
- Needham, J. (1974) The elixir concept and chemical medicine in East and West, *Journal of the Chinese University of Hong Kong*, **II** (1), pp. 243–265.
- OFSTED (1999) *The Quality of Nursery Education*, London: OFSTED Publications.

- Perry, B.D., Pollard, R.A., Blakley, T.L., Baker, W.L. & Vigilante, D. (1995) Childhood trauma, the neurobiology of adaptation and use-dependent development of the brain: How states become traits, *Infant Mental Health Journal*, **16**, pp. 271–291.
- Plotkin, H. (1994) *Darwin Machines and the Nature of Knowledge*, Cambridge, MA: Harvard University Press.
- Radin, P. (1972 [1956]) *The Trickster: A Study in American Indian Mythology*, New York: Schocken Books.
- Ramachandran, V.S. & Hirstein, W. (1999) The science of art: A neurological theory of aesthetic experience, *Journal of Consciousness Studies*, **6** (6–7), pp. 15–51.
- Ryan, W.M. (1969) *White Man, Black Man*, Milton, Queensland: Jacaranda Press.
- Sahlins, M.D. (1981) *Historical Metaphors and Mythical Realities*, Ann Arbor, MI: University of Michigan Press.
- Sherman, J. (1990) Child of chaos. Coyote: a folkloric triad, *The World and I*, April, pp. 651–660.
- Singer, T., Seymour, B., O’Doherty, J.P., Kaube, H., Dolan, R.J. & Frith, C.D. (2004) Empathy for pain involves the affective but not sensory components of pain, *Science*, **303** (5661), pp. 1157–1162.
- Strathern, M. (1988) *The Gender of the Gift: Problems with Women and Problems with Society in Melanesia*, Berkeley, CA: University of California Press.
- Tart, C.T. (2009) *The End of Materialism: How Evidence of the Paranormal is Bringing Science and Spirit Together*, Oakland CA: New Harbinger Publications/Noetic Books.
- Trevarthen, C. (1995) The child’s need to learn a culture, *Children & Society*, **9** (1), pp. 5–19.
- Trivers, R.L. (1971) The evolution of reciprocal altruism, *Quarterly Review of Biology*, **46**, pp. 35–57.
- Turner, R. & Whitehead, C. (2008) How collective representations can change the structure of the brain, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 43–57, Exeter: Imprint Academic.
- Turner, V. (1982) *From Ritual to Theatre: the Human Seriousness of Play*, New York: Performing Arts Journal Publications.
- Viveiros de Castro, E. (1998) Cosmological deixis and Amerindian perspectivism, *Journal of the Royal Anthropological Institute*, **4** (3), pp. 469–488.
- Weisbuch, M. & Ambady, N. (2008) Non-conscious routes to building culture: Non-verbal components of socialization, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 159–183, Exeter: Imprint Academic.
- Welsch, R.L. (1990) The laughing gods: An introduction to the Trickster essays, *The World and I*, April, pp. 615–624.
- Whitehead, C. & Turner, R. (2000) Is role-play a default state for human consciousness?, *Toward a Science of Consciousness: Tucson 2000*, Centre for Consciousness Studies, University of Arizona, Tucson, 8–15 April.
- Whitehead, C. (2001) Social mirrors and shared experiential worlds, *Journal of Consciousness Studies*, **8** (4), pp. 3–36.
- Whitehead, C. (2002) Political origins of the ‘hard problem’, *Toward a Science of Consciousness*, Centre for Consciousness Studies, University of Arizona, Tucson, 6–13 April.
- Whitehead, C. (2003) *Social Mirrors and the Brain: Including a Functional Imaging Study of Role-Play and Verse*, PhD thesis, Department of Anthropology, University College London.

- Whitehead, C. (2004a) Evolution of the human brain, *Toward a Science of Consciousness*, Centre for Consciousness Studies, University of Arizona, Tucson, 7–11 April.
- Whitehead, C. (2004b) ‘Everything I believe might be a delusion. Whoa!’ Tucson 2004: Ten years on and are we any nearer to a science of consciousness?, *Journal of Consciousness Studies*, **11** (12), pp. 68–88.
- Whitehead, C. (2006a) Collective deceptions in western science, *Toward a Science of Consciousness*, Centre for Consciousness Studies, University of Arizona, Tucson, 4–8 April.
- Whitehead, C. (2006b) Social display and the evolution of human self-consciousness, in Meyer-Dinkgräfe, D. (ed.) *Consciousness, Theatre, Literature and the Arts*, pp. 208–221, Cambridge: Cambridge Scholars Press.
- Whitehead, C. (2007a) Work versus play: What recent brain research can tell us about play, theatre, and the arts, and why it is taking scientists such an unconscionably long time to realize their importance, in Meyer-Dinkgräfe, D. (ed.) *Consciousness, Theatre, Literature and the Arts 2007*, pp. 487–503, Cambridge: Cambridge Scholars Press.
- Whitehead, C. (2007b) Why scientists cannot agree about human behavioural universals, what animal cartoons can tell us, and some suggestions as to when and why fundamental human differences evolved, *VI. Göttinger Freilandtage: Primate Behavior and Human Universals*, Department of Behavioral Ecology & Sociobiology, Deutsches Primatenzentrum, Göttingen, Germany, 11–14 December.
- Whitehead, C. (2008a) The neural correlates of work and play, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 93–121, Exeter: Imprint Academic.
- Whitehead, C. (2008b) You do an empirical experiment and you get an empirical result. What could any anthropologist tell me that could change that?, in Whitehead, C. (ed.) *The Origin of Consciousness in the Social World*, pp. 7–41, Exeter: Imprint Academic.
- Whitehead, C. (2010) Six keynote papers on consciousness with some comments on their social implications, *Journal of Consciousness Studies*, **17** (1), pp. 217–227.
- Whitehead, C. (in press) The culture ready brain, Invited paper for a special issue on Cultural Neuroscience, J.Y. Chiao (ed.) *Social Cognitive and Affective Neuroscience*.
- Whitehead C. (pending) The trouble with anthropology is..., Invited paper for a special issue on neuroanthropology, S. Reyna (ed.), *Anthropological Theory*.
- Whitehead, C., Marchant, J.L., Craik, D. & Frith, C.D. (2009) Neural correlates of observing pretend play in which one object is represented as another, *Social Cognitive and Affective Neuroscience*, **4** (4), pp. 369–378.

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