

History and Human Nature: Cross-cultural Universals and Cultural Relativities

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Recent studies in a wide range of different, if overlapping, fields of research have converged on a number of issues concerning the cross-cultural universality, or the cultural relativity, of human cognition. Those fields include social anthropology, linguistics, history, philosophy, developmental psychology, evolutionary psychology, and neurophysiology as well as cognitive science, the synoptic discipline, itself. The conclusions that have been proposed differ sharply. Some researchers (for example, Nisbett 2003) are convinced that there are radical differences in the ways in which different groups of humans perceive and reason — and in the ways in which earlier humans have done so in the past insofar as their thought patterns can be reconstructed from the evidence available to us. Others insist that, despite surface differences, there are robust underlying cross-cultural universals in such areas as colour perception (Berlin and Kay 1969), the basic emotions (Wierzbicka 1999) and even the ‘common-sense’ classification of animals (Atran 1990).

A first question that arises concerns whether or how far the parties to the disputes are merely talking past one another. Certainly there are major differences in the data cited and the methodologies used in those different areas of research. Social anthropologists analyse ethnographic field reports, including those stemming from questionnaires designed to elicit responses to key issues to do with how their subjects perceive and reason. These may relate to matters that do not form part of the ordinary experience of the people investigated, such as how they would classify animals or artefacts that they have never seen. But neurophysiologists investigating the emotions (for instance) marshal evidence from the use of positron emission tomography (PET) scanning, functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG) or electroencephalography (EEG) or from the study of patients suffering from brain lesions or reacting to treatment from drugs and chemical mediators and transmitters such as dopamine or serotonin. Philosophers meanwhile attempt clarification of the issues by purely conceptual analysis, while linguists and historians tackle the problem of whether or how far the different vocabularies that different groups use or have used imply differences in their perception or understanding.

Developmental psychologists, for their part, examine the ways in which children's assumptions concerning such matters as space, causation, time and number change as they grow older, where those working with very young infants devise experimental situations that can throw light on what their subjects treat as normal or alternatively as surprising. Evolutionary psychologists and primatologists in their turn investigate what *Homo sapiens sapiens* as a species shares with, and where we differ from, early hominids and our nearest relatives among the primates, exploring the questions both from the point of view of an individual's cognitive capacities, and from that of the various patterns of group behaviour, as, for instance, in the case of the development of altruism, of self-consciousness, and of cheater detection mechanisms.

The methods used are often undeniably sophisticated, and where experimental, subject to rigorous controls. But obviously they have their limitations especially with regard to the inferences they legitimate. Let me rehearse the chief problems that beset the different approaches, some relatively easy to obviate, others not at all so.

Evolutionary psychology, first, aims and to a very large extent succeeds in establishing the principal differentiae, genetic, anatomical, physiological as well as psychological, that mark out the human species as such. But what by definition falls outside that remit is all the apparent diversity of cognitive capacities among different humans — which is where most of the problems lie. Until they address that question (some do of course¹), these studies cannot do much to help clarify or resolve the question of whether there are important or merely superficial differences in the ways in which different human individuals or groups perceive and reason.

Again the reach of neurophysiology is limited. It can describe precisely which areas of the brain are active, and which are affected, by certain experiences and by certain interventions. But the problem of matching those findings with patients' subjective reports of their feelings can be severe. Those reports tend to focus on what appears salient to the patient, while the data that brain scans yield are much more complex and contain information that is hard or even impossible to correlate with subjective experience.

Then the children studied by developmental psychologists usually come from the societies the psychologists themselves belong to, mostly North American and European ones. The extendibility of the results to other children has been called into question. Work done on Israeli and Japanese children may confirm certain conclusions, but also suggests important differences, notably with regard to the assumptions made about the categories of animals, plants and inanimate objects (*Cognitive Variations* 46, citing Hatano *et al.* 1993: the Japanese showed a tendency to attribute living properties to inanimate things, while the Israelis conversely tended not to ascribe living properties to plants).

Philosophers from Aristotle to Kant have shown great ingenuity in analysing what must be the case in human cognition of space and causation, for example, but have often come up with dramatically divergent results which — the scientists will complain — lack experimental corroboration and so rank as pure speculation. Equally, the subjects whom historians study

cannot of course confirm or deny the interpretations put on their cognitive capacities.

The linguist's dilemma is of a different nature. The variety in the 6000 or so languages still spoken across the world is immense and provides *prima facie* evidence of extreme cultural diversity. At the opposite end of the spectrum, however, there is Chomsky's postulate of a deep structure underlying all natural languages. While that provides a robust cross-cultural universal framework for language as such, how far that licences universalist conclusions where cognitive capacities are concerned remains highly problematic. One attempt to apply a universal linguistic analysis to human emotional experiences illustrates the difficulties. This is Wierzbicka's thesis (1999) of a 'natural semantic metalanguage' into which all reports of such experiences can be parsed, a thesis that is open to criticism first on the grounds of the lack of transparency in the terms on which the metalanguage is based, and second, on its extreme reductiveness. In *Cognitive Variations* (64–5), I identified the ambiguities of several of the English terms on which the metalanguage relies (not just 'good' and 'bad', which play a key role in the evaluations offered, but also 'want' and 'feel' themselves).

Social anthropology, finally, faces its general problems of translation and interpretation but then also specific further ones in relation to the questionnaires that have been used to investigate cognitive skills. The first difficulty relates to the general issue of how different conceptual schemes are to be matched against one another. This is always harder work than is at first imagined, not that the reaction to that should be to take refuge in the notion of the incommensurability of systems of belief, while to assert that they are mutually unintelligible is merely to throw in the towel: I shall come back to that. But the more specific type of problem is more directly relevant to some well known studies of cognition such as the work of Berlin and Kay (1969) on colour perception and of Berlin *et al.* (1973) on folk biology, studies often cited as providing the best possible evidence for cross-cultural universals in those cases. Yet this work suffered, in my opinion, from systematic flaws. Thus, in the colour case, the possibility that indigenous colour terminology related to luminosity or to saturation, rather than to hues, was not given sufficient weight.

More fundamentally, when subjects were asked to match their vocabulary to what they saw on the colour charts or the Munsell chips presented to them in the field, that tended to beg the question of whether the primary connotation of that vocabulary related to colours as such in the first place. In the case of the Hanunóo, for instance, who had been studied by Conklin (1955) in work cited by Berlin and Kay (1969), the four main terms that Berlin and Kay assumed confirmed their interpretation that Hanunóo was a stage 3 language, were not differentiated primarily by chromatic variation. Rather as Conklin pointed out, the primary dimensions of differentiation were (1) lightness versus darkness, and (2) wetness versus dryness. In many instances, the results obtained were the artefacts of the protocols of the investigation. The further complication in the colour case arises from the variations in the human eye. These are not adequately captured by the expression 'colour-blindness' which might suggest an all or nothing contrast. Rather

Mollon (1995) has shown that there are differences in the perception of colour difference not just between dichromatic and trichromatic subjects, but also within the latter — and Jordan and Mollon (1993) have explored the possibility that some human subjects (only women, with two X chromosomes) are tetrachromatic.

My own interest in these problems stems, in the first instance, from my historical studies of ancient Greek and Chinese thought, where indeed some extraordinary theses have been proposed, such as that the Greeks were all more or less colour-blind (Gladstone 1887): much of their colour vocabulary relates indeed to luminosity rather than to hue, but that does not mean that they were incapable of discriminating the hues in the rainbow. Again when Lévy-Bruhl's (1923) notion of *mentalités* was still thought of as a viable hypothesis, a Chinese 'mentality' was sometimes invoked to describe whatever was thought to be idiosyncratic about their ideas (Granet 1934).

One of the problems I was aware of from the outset was that of the difficulty, rather the unacceptability, of generalizing about 'Greek' and 'Chinese' thought in each case in its entirety. Indeed Nisbett's recent study compounds the problem. His category of 'the West' comprises 'Britishers', 'Germans', 'French' and 'European' Americans who include 'blacks, whites and hispanics' — where many of the key characteristics of their thought are held to have originated in ancient Greece! Under 'East Asians' conversely he lumps together not just Chinese living on the mainland and in Taiwan, but Chinese of the diaspora, including Chinese Americans, as well as Koreans and Japanese, two nations that consider themselves very different from the Chinese of the PRC.

Yet the folly of generalizing even about just the ancient Greeks as a whole is revealed by the fact that on such key topics as agency, causation, change, the emotions, and even the analysis of colour, there were fundamental disagreements as between the Presocratics, the atomists, Aristotle, the Stoics and other Hellenistic philosophers, Epicureans and Sceptics. No more is there uniformity on cognitive issues across the Chinese writers of the classical period, let alone after the influence of Buddhism had begun to be felt, even though their public expressions of disagreement were in many cases less strident than those of the Greeks.

But at this point it might be objected that it is all very well for me to point to the differences in the data under consideration, the methodological difficulties that have to be guarded against, and the general complexity of the problems, but that does not advance our understanding. We are still faced with the apparent impasse between those who take the cross-cultural universalist view and those who insist on cultural differences. In *Cognitive Variations*, I offered two lines of attack that can, I suggested, help us to make some progress on at least some of the issues.²

The two ideas in question are first that of divergent 'styles of inquiry' (which I have adapted from Crombie 1994, and Hacking, especially 1991) and second, that of the 'multidimensionality of the phenomena'.³ Styles differ, for instance, in the use of statistical analysis, or of new modes of classification, or of experimental interventions. Obviously where the study of the emotions are concerned, the use of PET scanning gives access to information that is only

available by that method. Similarly, DNA analysis brings to light otherwise unrecognized similarities and differences in the species and genera of animals and plants. Most would argue that in those two cases, the style does not so much invent the objects revealed, as discover them: they were there all along. But in other instances, some argue that the mode of investigation itself creates the objects that it then goes on to study. Latour (1988) argues this in the case of the microbes that played such a crucial role in the controversy between Pasteur and his opponents. Not everyone will go along with that, but may well accept other cases where the phenomena are brought into existence by the experimental situation. The vacuum produced by the air-pump studied by Shapin and Schaffer (1985) would be a case in point. Up until then, the vacuum had been merely a theoretical entity. We can all think of plenty of parallels from right across the board of twenty-first century science.

Most of the more striking examples are modern ones, but already in antiquity styles of investigation make a difference. Aristotle's zoological taxonomy, for instance, was based in part on the information obtained by animal dissection and vivisection, without which he could not have raised some of the issues he did concerning the forms and functions of the parts of animals.

At this point, some might be tempted to say that there is just one correct mode of inquiry into each subject yielding one accurate set of answers. But following up the animal taxonomy problem and invoking my second point about the multidimensionality of the phenomena may suggest that this is a mistake. In relation to colour, I have already made the point that some classifications focus on hues, others on luminosity or on saturation, where it is not the case that just one of these is 'right'. Again in the case of spatial experience, Levinson (2003) and his colleagues have pointed to the differences between an absolute, an intrinsic and a relative framework of reference (though in certain circumstances, these can be combined). In this instance, too, it would be arbitrary to pronounce that one provides the 'correct' frame of reference, while the other two fail.

Zoological taxonomy provides a third, even more remarkable, example (Ellen 1993). Different criteria can be used to decide which groups of populations should be accorded species rank (Mayr 1957). Among those favoured in the past have been (1) morphology, (2) cytology, (3) interfertility, and (4) the extent of DNA hybridization, while nowadays, taxonomists concentrate rather on (5) the analysis of SSU rRNA (small subunit ribosomal RNA) gene sequences (e.g. Simpson and Roger 2004). None of these is a merely arbitrary procedure: in each case, there can be more and less accurate applications of the criterion in question. But while all can be said to offer the possibility of yielding objective results, these do not all converge. To arrive at an orderly taxonomy the similarities and differences have to be *weighted* and this risks circularity: you get out what you put in. There is no one definitive zoological taxonomy since there is no neutral way of determining which criterion or set of them to invoke.

This example serves to underline the weaknesses of both the cross-cultural universalist and the cultural relativist positions. The former has to accept that no one solution to the problem of animal classes is available — let alone one that corresponds to an innate, universal 'common sense'. But the relativities

we need to pay attention to do not stem just from cultural divergences, for example the different skills that result from the interaction between observer and observed. They are also the product of the complexity, or as I would rather put it, the multidimensionality, of the phenomena themselves and of the ways of investigating them.

How far is any of this relevant to the animal and plant taxonomies reported by social anthropologists or those found in the historical record? As already remarked, Atran's thesis of a universal underlying common sense classification that — as he sometimes claimed — converges on the findings of science is open to the objection that 'science' itself has not converged on a definitive solution to the problems. The considerable surface differences in different cultures' views on the matter reflect different skills and interests, both pragmatic and symbolic: pragmatic since to survive, most societies need to have some pretty detailed knowledge both of animals and animal behaviour and of the species of plants, edible and poisonous; and symbolic since animal and plant groups regularly provide a template for ordering experience in other domains. In judging each classification we encounter, we have first to ask what it is a classification *for*.

The actual factors in play in any given folk classification are a matter for detailed commentary and interpretation by those who have immersed themselves in the belief systems, practices and experiences of the group concerned. But it would be foolish to hold that each society is committed to a single immutable classification. The evidence from both ancient Greece and China shows that different such classifications were proposed by different individuals, reflecting their particular interests, at different times. In Aristotle's case, his analysis of the different main genera of what he called the 'bloodless' animals involved him both in new coinages and in new groupings. In this context, as in many others, he criticized traditional assumptions and was in no way inhibited by the constraints of the Greek language from suggesting new solutions to the problems. Once again, to try to generalize about the Greeks as a whole is a trap: we do not, after all, generalize about ourselves.

Thus far, I have been dealing mainly with aspects of perception and of the ordering of experience. Two among the major problems that remain relate to reason itself and to the possibility of alternative ontologies. In an earlier phase of the debate the diagnoses of a pre-logical mentality and of primitive irrationality were common. Often the purported grounds for this were apparently contradictory statements wrenched out of context and assessed by the criteria of 'our', impeccable, Western logic. Few remarked that the tables could so easily be turned. If Westerners diagnosed irrationality in the reported Nuer belief that twins are birds, what were the Nuer to make of the belief upheld by many Westerners that God is one and God is three? I have repeatedly used Christianity to remind ourselves how difficult it is to understand each other (let alone the Nuer) even when we all share the same natural language and live in the same 'advanced' 'Western' 'democratic' societies.

Even when more context was taken into account, some much oversimplified judgements on others' logic have been made. Luria's (1976)

investigations of the grasp of elementary logic of certain Siberian peoples illustrate the point. In one group of studies, his subjects were first told that in the Far North, where there is snow, all bears are white, and second that Novaya Zemlya is in the Far North and there is always snow there. They were then asked what colour the bears in Novaya Zemlya were. Some of the subjects replied that they did not know, as they had never been to Novaya Zemlya. One answered: 'You've seen them, you know. I haven't seen them, so how could I say?' But instead of concluding, as Luria did, that these people were weak deductive logicians, he might have inferred that they were brilliant pragmatists. When the investigator asked the question, what colour are the bears in Novaya Zemlya, that implicitly threw doubt on the earlier information that in the Far North all bears are white.

Just as striking are the results suggested by the application of the so-called Wason test. In this, four cards are presented to subjects and they are told that each card has a letter (A or B) on one side and a number (2 or 3) on the other. They were then given the rule that if the letter is A, then the number is 2. Presented with four cards where the sides that could be seen carried A, B, 2 and 3, respectively, they were then asked which card or cards had to be turned over in order to disprove the rule. While most see that the card showing A needed to be turned over, few appreciate that the card showing 3 also needed to be. The test has been carried out in slightly modified forms and the interpretation of the results has generated a considerable literature. But the fundamental point is that here is a simple test where Westerners often make mistakes, and that even includes professional logicians (Wason and Johnson-Laird 1972).

I am not of course claiming that all humans reason equally well: they clearly do not. But the factors that influence performance are complex, and although schooling is certainly one, the importance of training in formal logic is easily exaggerated. The differences that Nisbett's experiments have brought to light suggest that values are a major factor, not that his massive generalizations concerning 'Asians' and 'Westerners' withstand scrutiny, given the way in which different populations, including historical ones, are lumped together under each rubric. The way I interpret his data is that they tend to confirm a point already to be found in Aristotle, namely that the way a person reasons reflects their attitudes and character, the kind of person they are, itself the product of a complex of factors, biological ones, no doubt, as well as those relating to upbringing and social acculturation.

So I turn now to the major issue of ontologies, which I have already broached in connection with the new objects created in scientific experiments. The principal debate here can be expressed as a matter of a dispute between, on the one hand, a one world thesis, where differences relate just to the views taken of that world, and, on the other, the more radical idea that the worlds that different humans (let alone other sentient beings) inhabit themselves differ in the sense that they are incommensurable with one another. First some disambiguation of what 'world' can mean is in order. On the one hand, when it is used of the universe, the totality of things, there can only be one of them — though it is as well to remind ourselves that we can know nothing

about what lies outside the cone of accessibility defined as the areas of space-time from which information can reach us; moreover, it is an open question whether, or at what point, the physical laws we are used to invoking to make sense of our here and now break down.

On the other hand, 'world' is often used not of the totality of things, but of reality as experienced, leaving open the possibility that different individuals and groups have different such experiences between which there is no common ground. Thus, some people acquire skills that others are incapable of, and indeed are quite baffled by.⁴ We cannot begin to understand musicianship until we acquire and practice those skills ourselves, and comprehension there is not so much a matter of being able to give a verbal account as participating in the activity.

Both the study of ancient civilizations and modern ethnography provide plenty of examples that we can bring to bear on the problems. One instance from ancient Greece that I have often used is the contrast between atomism and continuum theories, where we may note that very different ontologies were proposed by authors who spoke the same language and who lived under more or less the same type of political regime (that of the ancient Greek city-state). Democritus said that atoms and the void alone are real. Aristotle countered that matter is infinitely divisible, and all physical objects are made up of earth, water, air and fire. Again Democritus treated space and time as constituted by indivisibles, where Aristotle saw them as continua. For Democritus, there is an infinite number of cosmoi, separated by space or time or both, while Aristotle believed in a single eternal cosmos. The values associated with each system also contrasted sharply, for Aristotle held that the cosmos is the product of an immanent craftsmanlike force, while Democritus maintained that his cosmoi were the result of the random physical interaction of atoms.

Obviously, these represent at the very least two widely contrasting views of what reality consists of. At the same time, a case can be made that *in certain instances* at least the dispute between Aristotle and Democritus related to aspects of a world they (in some sense) both shared.⁵ They had very different conceptions of the stars, but they were both recognizably attempting theories of certain visible objects, their nature, constitution and distribution in space. Aristotle for his part certainly considered that he and Democritus offered competing accounts of the same phenomena. It is tempting, but it seems to me misguided, to suppose that their cosmologies were altogether incommensurable and therefore imply totally different worlds; there is enough common ground between Democritus and Aristotle to back away from that conclusion. On the other hand, the issue between them was not a matter on which a simple verdict, contrasting the truth of one story with the falsehood of the other, is — or ever was — possible. Cosmologies, we should remind ourselves, are not generally reducible to combinations of well formed formulae, wffs, to which truth tables can be applied.

A second ancient example relates to the contrast between substance-based ontologies (which both Democritus and Aristotle exemplify) and process-based ones (as in *Zhuangzi*, the *Huainanzi* and many other Chinese thinkers, and arguably also in Heraclitus). In a process-based ontology, 'water' and

'fire' are not substances but processes — water is 'soaking downwards' as one Chinese text has it (*Hong Fan* in Lloyd 2007: 138). Process-based ontologies certainly favour the explorations of the transformations of things (which substance-based ones find hard to accommodate). How far Aristotle would have understood those Chinese texts is questionable: in the case of Heraclitus, he shows marked tendencies to dismiss his ideas as incoherent — he cannot have meant what he said — which is just the sort of reaction we should learn to avoid.

However, recent ethnography provides even richer materials for consideration. Thus Descola (2005) has proposed an ambitious fourfold schema of such ontologies, 'animism', 'totemism', 'analogism' and 'naturalism' (though his use of the first two terms differs from that of much earlier anthropologists such as Tylor 1871). These four are distinguished on two axes of differentiation, 'physicality' and 'interiority'. The former concerns what is believed about bodies and physical objects generally, while the latter relates to the self and beliefs about other persons or intentional beings. Thus in 'animism', other beings besides humans have spirits, but what distinguishes them is their bodies; 'totemism' assumes a continuity between humans and non-humans on both the physicality axis and the interiority one, while 'analogism' assumes discontinuities on both those axes while setting up analogies between the domains thus differentiated. Finally 'naturalism', the dominant current Western ontology, differentiates between humans and non-humans on the interiority axis (humans alone have culture in the strict sense) while humans and non-humans are linked by their shared physicality. We are all made of the same stuff.

Evidently, this schema provides a typology of fundamentally different accounts of what there is, though the question of how far they are hermetically sealed off from one another is an open one. In principle, they are mutually exclusive, since with both criteria, physicality and interiority, the question is whether there is a continuity, or a discontinuity between humans and other creatures. Yet in practice adjustments have to be made. In particular, 'naturalism' has a history and must somehow have developed from one or more of the other ontologies in the schema.

A different but equally radical differentiation of ontologies has been proposed by Viveiros de Castro (1998). In several societies across the world, especially in Amazonia, the way humans perceive animals and other subjectivities including the gods and spirits differs profoundly from the way these beings see humans and see themselves. Humans normally see animals as animals, and spirits (if they see them) as spirits. But animals (predators) and spirits see humans as animals (prey), just as animals (prey) see humans as spirits or as predatory animals. Equally animals and spirits see themselves as humans; they see their food as human food. Jaguars for example see blood as manioc beer. This is 'perspectivism' that challenges 'our' normal understanding of the boundaries between categories and indeed 'our' normal expectation that those boundaries are stable, if not permanent.

I should preface my reactions to these accounts with a disclaimer. There are many detailed aspects of these problems that are well beyond my competence to pronounce on. But on the basis of my reading of the literature I may

venture some deflationary remarks on the principal underlying philosophical question, the issue between a multiple worlds hypothesis and a multiple world-views one. The inference to alternative worlds, when it is made, appears largely to stem from the recognition that the differences registered extend to the realities in question and not just to representations of them. (It is because those realities are 'incommensurable' with one another, so it is claimed, that we are forced to talk of multiple worlds.) But grounds for qualifying that conclusion come from the very success with which the anthropologists capture these multiple 'worlds'. Although commentators, philosophers especially, have often speculated about conceptual frameworks that are mutually unintelligible in their totality, that is not the case in the instances I have cited. No anthropologist, indeed, to my knowledge, has ever returned from the field simply to announce that he or she understood nothing about the people they went to study.

Descola and Viveiros de Castro in particular do a remarkable job of describing not just what they understood about their subjects, the Achuar and the Araweté, for instance, but also what the Achuar and the Araweté themselves understood — even though what they understood is so different from what we might unguardedly assume was there for them to understand. In general, the survival of any society depends, as I said, on extensive knowledge of their natural environment, of plants and animals and animal behaviour, to which the Achuar, for example — and not just they — add some impressive technological skills. These relate, for instance, to the construction of blow-pipes of the right materials and dimensions and their extraction of poisons with which to tip their arrows in their hunt for their prey. However, the monkeys they hunt are not 'just' monkeys; they have to be carefully deceived into believing that the Achuar are not hunting them. (Animals see humans as spirits or as predatory animals, as Viveiros de Castro put it.)

On the one hand, we should resist any reductive move to homogenize what is real for other people with what we accept as real (whatever that is). There is no theory-free way of accessing an answer to the question of what the world comprises, and in cases where multidimensionality reigns a plurality of answers remains in the field. The temptation to dismiss others' ideas and practices as irrational, primitive or whatever has to be avoided. Rather the striking data we encounter in both ancient civilizations and modern ethnographic reports should be treated as an opportunity to *learn*, even while when we begin to do so we have to be prepared to modify or abandon many of our cherished 'common-sense' assumptions about such matters as causation, change, the self, personhood. We have to accept that such learning is always hard work and never complete: there is no algorithm for success. We just have to make the best use we can of such bridgeheads of intelligibility as will enable us to begin to make sense of others, where again it is salutary to remind ourselves that it is not just *mana* or *tabu* or *taonga* that pose challenges⁶ but also the transubstantiation of the communion wafer and wine into the flesh and blood of Christ.

On the other hand, it is not necessary (so it seems to me) to suppose that the Achuar inhabit a comprehensively different world that Descola had to enter when he struggled and eventually partially succeeded in coming to

terms with their perception of reality. Peoples' and groups' experiences differ, enormously widely indeed.⁷ Both ethnography and modern science provide plenty of examples of ontologies that challenge 'our' 'common-sense', and the case of new objects created in scientific experiments shows that the possibilities are open-ended (and who knows what is there to be found, let alone might be invented, in new explorations here on earth, let alone in distant galaxies). But only in the case of the insane, maybe, are the 'worlds' mutually inaccessible to one another, and even then, one may suspect, never totally so.

What conclusions can be suggested from all this work? Where have we got to and how can we make further progress? Let me suggest five final remarks.

(1) I would start with the observation that the extreme form of linguistic determinism is a non-starter. We are not the prisoners of our natural language — no more were ancient Greeks or ancient Chinese of theirs. The divergent views that were entertained, and perfectly well expressed, on fundamental questions, is evidence enough of that. (Of course one can always say that at a deeper level all those divergent Greek, or divergent Chinese, views betray certain common features that *do* stem from Greek, or Chinese, language; but I would challenge anyone to say what precisely they were.)

(2) Then what marks out *all* humans from other animals is a question that can be, and to some extent is being, determined by physical anthropology and evolutionary psychology. That is a field of research that can and does yield robust universals about human anatomy, physiology, even psychology. But it is worth remarking that views about those universals are subject to change, even in a state of flux. What looks like a robust universal to one generation of researchers turns out on further investigation to incorporate considerable variation.

(3) But that, by definition, does not tell us about the diversities within human individuals and groups, and it is important, I now see, to be very careful to distinguish between the variations that may exist between individuals (as in the colour perception case) and those that do so between groups (as in the spatial framework case, where there may be varying inputs from culture and from language, for example). In the different cases I considered, some differences can be put down to biological factors (relating to the structure of the rods and cones in the eye, to the differential development of the parietal and frontal lobes and the hippocampus, and that of the amygdala and the limbic system in general; as neurophysiology and physical anthropology progress, I have the impression that the variations within the members of the species of 'humans' grow and grow). But some relate to differences in the phenomena that the subject focuses on, whether or not those differences are made salient in the natural language spoken or are otherwise culturally learned. Meanwhile, the introduction of different brands of perspectivism is a reminder of the widely differing experiences of reality of human groups across the world, even though that does not legitimate the denial that in *some* sense, we all share the same world, when bridgeheads of intelligibility can be used to connect those experiences. Even when a jaguar is a shaman in disguise, it is still (also) a jaguar.

(4) In all the detailed case-studies I undertook in *Cognitive Variations*, neither global hypothesis — that of the cross-cultural universalist or that of

the cultural relativist — does justice to the complexities of the problems. For the way ahead, as a minimum, we need to pay due attention both to the differences in the styles of inquiry used and to the multidimensionality of the phenomena that are there to be investigated. Only by so doing, and by bringing to bear the findings of a wide range of different disciplines, can we hope to reconcile our evident psychic diversity with our shared humanity. An obviously desirable goal, that reconciliation, but along the way we have much to learn both about psychic diversity and about shared humanity, and that is both challenging and worthwhile. At the end of the day, we should be able to avoid some of the sweeping generalizations that have bedevilled the discussion of a topic that clearly has such potent emotive undertones.

(5) Finally, if the analysis offered provides a way of beginning to do justice to very different and apparently conflicting conceptual frameworks and experiences, that is all to the good. However, there remains the major question of how, within any such framework, error is to be diagnosed. Different conceptual frameworks, my argument is, may all be valid; it is not a question of having to choose between them. But that does not mean that they are all infallible in all their applications. One major problem for the history of science is to identify and explain how it is that certain ideas and practices come to be seen as mistaken — not because some authority figure rules against them, but because their proponents, adherents or practitioners themselves come to change their views. Descola (2005) talks of different ontologies; the problem is how is any transition made between them?

Anthropologists have often tended to report on the ontology or world-view of the target society they studied as if it were homogeneous and unchanging. When differences between individual reporters are noticed or the possibilities of diachronic change are mentioned, this is generally played down in the interests of reconstructing the system as a whole. That is what anthropological monographs are usually intent on providing. Conversely, the stories told by historians of philosophy or of science are all about change and development, about dramatic Revolutions and the Great Divide and so on — but that tends to discount the continuities in question. I return to my starting point that we need to combine the insights of many different fields of research.

Notes

¹ This is notably the case with the studies of Tooby and Cosmides (e.g. 1992). For them, the cognitive differences between individuals and groups are to be put down to broadly environmental (including social) factors working on an overwhelmingly uniform human psychological architecture that evolved during the millions of years of hunter-gatherer life in the Pleistocene.

² It is important to note that it is not the same story to be told in the different cases under consideration. Colour discrimination is enormously diverse — as the work of Mollon (1995) has shown. But spatial frameworks fall within one of three main types (or combinations of them).

Emotional experience, as revealed by PET-scans and the like, are more like the colour case than the spatial one — and also more like the colour case in the role of natural language in making certain aspects of experience more salient to those who describe them.

³ The two ideas, of the multidimensionality of the phenomena, and of divergent styles of inquiry, enable one, so I would like to think, to finesse the realist/relativist dichotomy. The first presupposes that the dimensions are objective, and independent of any observer remarking on them (and so to that extent is 'realist') but the second allows that the end results of an inquiry are the

product of the style brought to bear (and therefore relative to that style). Neither a straightforward realist, nor a thoroughgoing relativist, account does justice to the situation, though the recommendation I would make incorporates features of both approaches. But then it always seemed to me that to treat the two members of the dichotomy as mutually exclusive and exhaustive alternatives was a mistake.

- ⁴ The evidence that Levinson (2003: 273, 316, 324) adduced in relation to the dead-reckoning abilities manifested by those with an absolute frame of spatial reference would be a case in point.

- ⁵ Yet as noted, Democritus postulated infinite cosmoi.

- ⁶ Henare's recent discussion of the Maori concept of *taonga* (Henare 2007) is a reminder that the star examples that attracted so much attention from outside as well as inside social anthropology are just a tiny sample of those that raise fundamental problems of interpretation.

- ⁷ Given Ingold's points (2000) that perception involves an interaction between observers and observed and the acquisition of distinct skills in the process, considerable divergences in the experiences of individuals and of groups are, of course, only to be expected.

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