Chapter 13

The underpinning of scientific knowledge systems: Epistemology or hegemonic power?

The implications of Sandra Harding's critique of North-Atlantic science for the appreciation of African knowledge systems

The idea that North-Atlantic science is of an incomparable higher order than other local knowledges world-wide typically forms part of Eurocentrism and European expansionism of the nineteenth and early twentieth centuries CE. Cultural relativism emerged in the middle of the twentieth century as the Northern intellectual reaction against colonial subjugation, and as the self-evident implication of the theory of the internal systematics of local cultural orientations such as was supported by prolonged anthropological field-work within one narrowly circumscribed local community. To declare all science including North-Atlantic science to be merely ethno-science is an act of cognitive relativism. From that relativistic perspective the internal epistemology of North-Atlantic science (the claims of objectivity, relativity and universality*) was declared to constitute a hegemonic myth. Although Harding, under reference to specific studies, contributes much to an understanding of the socio-cultural, political and historical factors because of which such claims could establish themselves, in fact she rejects the strong relativism implied in that position: if we deduct all socio-cultural, political and historical factors, and wholeheartedly admit that North-Atlantic science is a knowledge system that to a considerable extent has been determined by North Atlantic society and its history, then it still turns out that North-Atlantic scientific knowledge is largely valid knowledge, for reasons which cannot be reduced to hegemonic over-determination but which instead simply lie enshrined in the internal epistemology that stipulates scientific procedures through which manifestly valid knowledge can be obtained. Thus Harding ends up in a position which, from a very different point of departure and along a very different argument, has been defended for a considerable period of time by Gellner and his Anti-Relativist School (cf. Gellner 1959, 1970, 1990 / 1985; Hall & Jarvie 1996).*

13.1. Introduction

According to common views, which we shall critically examine in the course of this Chapter but will not fundamentally reject, North Atlantic science is a repository of valid knowledge about nature.

However, it is out of the question that North Atlantic science has the monopoly of valid knowledge about nature. Every human community, wherever in the world and at whatever period of time, that manages to survive for more than a few years and that is not totally parasitic upon other such communities, unmistakably possesses the means that enable its members to engage in effective extraction from nature (resulting in food, shelter *etc.*) on the basis of valid knowledge about nature.

To the extent to which they enable their members to engage in effective extraction from nature, most societies outside the North Atlantic region, including most if not all African societies, are therefore repositories of valid knowledge about non-human reality. In principle their knowledge about non-human reality is comparable with North Atlantic science, and of comparable effectiveness.

In addition to knowledge about non-human reality, every society comprises an elaborate system of knowledge about man-made symbols, classifications, norms, representations, institutions – both those of the members of that society itself, and (to a more limited extent) those of surrounding societies and societies of the past. Let us call such knowledge 'societal knowledge'. This societal knowledge deserves to be called 'valid' if it enables a member of the society (even a temporary member, such as an anthropologist, an Islamic or Christian missionary, or trader) to act in a socially recognised and hence effective way within that society. However, this type of valid societal knowledge is not about nature, and since it is intimately tied up with the socio-cultural constructs humans within a given local society have more or less agreed upon, it may be safely assumed to have no compelling validity outside the boundaries (however blurred and situational) of that society in question.[555]

The valid knowledge which any society has about nature and which enables its members to engage in effective extraction from nature, is usually not stored in the abstract, specialised format characteristic of North Atlantic science; it

[555] Of coure, this is not to imply that, by contrast, a society's knowledge about *nature* has *ipso facto* validity *outside* that society's boundaries. Starting out with the classic and still useful (if no longer altogether up-to-date, *cf.* Gettier 1963; Moser 1993) definition of knowledge as 'justified true belief', elsewhere I present an argument to the effect that we can easily identify such justified true belief within any one given society, but that it is very difficult, if not practically impossible, to assess the justified and true nature of beliefs from one culturally constructed life-world to another; *cf.* van Binsbergen 2003b: Ch. 7. We could see, in this dilemma, a ground for cultural and epistemological relativism; but I would rather suggest that this dilemma shows that we need a different definition of knowledge – one that is wisdom-orientated.

tends, by contrast, to be embedded in two other formats: in directions (often not even verbal) for practical action, and in complex religious representations, saturated with symbolism, in such a way that these representations tend to have considerable (but never total)[556] overlap with local societal knowledge as defined above. For this type of cognitive systems comprising knowledge about nature, cultural anthropology has coined the term 'ethno-science'[557] *i.e.* a strictly local form of knowledge about nature tied closely (but not necessarily absolutely) to the social and cultural orientation of the people or ethnic group managing that knowledge.

Because of its being intertwined with local societal knowledge including beliefs, representations and symbolism, and because if its specific from – a form characterised by Lévi-Strauss by such terms as 'pensée sauvage'[558] ('primitive thought') and 'la science du concret' ('the sience of what is concrete') – which differs greatly from that of North Atlantic science, it is in general very difficult to isolate, from among these local systems of knowledge, that which is just

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[556] 'Never total': this is a time-honoured contention of classic anthropologists (*e.g.* Malinowski 1954/ 1948; Evans-Pritchard 1972 / 1937; Gluckman 1955) who studied systems of knowledge outside the North Atlantic region and stressed the considerable rationality and practicality of local systems of production, medicine, *etc.*, which in pre-classic anthropology would tend to be entirely relegated to the fields of magic, religion, and superstition.

[557] *Cf.* Frake 1961, 1962; Sturtevant 1964.

[558] The literal translation of the French *sauvage* is 'wild, savage'. It was the standard expression used for pre-civilisation forms of human culture, especially those as encountered by West Europeans in the course of their explorations in the context of early European expansion (15-18th c. CE). In early anthropology / archaeology, with its evolutionist slant (*cf.* Bowler 1992), 'savage' became the term (along with 'primitive') for the supposedly lowest, earliest stage of the development of human societies and cultures (a few examples out of numerous others: de Flacourt 1658; Lafitau 1724; Pickering 1840; Angas 1847; Lubbock 1865; de Quatrefages 1884; Cameron 1887; Clodd 1898; Declé 1898; Kidd 1906; Freud 1913 / 1940 / 1918; Malinowski 1926; Richards 1932). The latter two references are to anthropologists who belonged to the best of their generation – it would be slightly anachronistic to accuse them of racialism in the present-day sense, for when they were writing the time was simply not yet ripe for a critical distance from the hegemonic, subordinating implications of the term ' savage'. For a critical approach, *cf.* Amselle 1979. Lévi-Strauss was neither an evolutionist nor a racialist (Lévi-Strauss 1952), he (wrongly, but that is not the point) held his rationalistic approach to human thought (*as binary opposition* considered to be absolutely constitutive of human culture) universally valid; therefore I am inclined to translate his 'sauvage' (which was rendered as 'savage' in the English translation of his book in question, 1973 – while the Dutch translation retained the transparent term 'wild') as 'untutored, illiterate, un-academic'. There can be no doubt about the non-racialist, but universalising, meaning which Lévi-Strauss attached to his term 'savage'; as the blurb of the English translation of *Totemism* (1962) reads:

> 'the author notes that [totemism] has gradually come to be understood not as a distinctive institution, but as a way of thinking which is *as characteristic of our own thinking* as it is of the "primitives" for whom totemism was an integral part of life.' (my italics)

Cf. a title by the modern and celebrated anthropologist Jack Goody: *The Domestication of the Savage Mind* (1977), implicitly building on and critiquing Lévi-Strauss.

valid knowledge about nature, and that which is symbolic wrapping and free variation. In itself the desire to arrive at such a distinction between 'valid knowledge about nature' and 'invalid cultural wrapping' is rather suspect, for such a desire is implicitly based on a number of interculturally *untenable* assumptions:

- the mode of knowing and the format of modern North Atlantic science constitutes
  - an objective touchstone by which all other valid knowledge about nature must be measured – as well as
  - a universal format in which all valid knowledge about nature can be expressed,
  - in such a way that such knowledge about nature as does not fit that format cannot constitute valid knowledge about nature.

On the other hand, from the point of view of the local cultural orientation and the local society, the knowledge contents of an ethno-science, including such valid contents as it may seem to comprise from the viewpoint of Western science, only attain meaningfulness on the basis of their being embedded in the whole, in such a way that the symbolic and societal components are not merely a superfluous fringe but on the contrary constitute an integral part of that knowledge and the latter's validity. This is the first time in this Chapter's argument that we hit on the theme of the subordinating / hegemonic format of North Atlantic science; we shall have to return to this theme repeatedly.

In earlier work[559] Sandra Harding explored the limitations of established North Atlantic science (especially natural science) from a feminist and anti-racist point of view. In an important article published 1996-1997 (Harding 1997), she formulates what may well be the ultimate challenge to such science, by asking the question: 'Is North Atlantic science merely an ethno-science?' In other words,

> is also North Atlantic science, *to which we are accustomed to attribute such characteristics as objectivity, rationality and universality on the grounds of what we are inclined to consider its unique internal epistemology* – is also that form of knowledge merely one system of knowledge about nature among many such systems, and is also North Atlantic science so much intertwined with local symbolism, belief and societal knowledge that North Atlantic knowledge does not really deserve the privileged position that is so often accorded to it?

In the first part of this Chapter an extensive critical summary of Harding's own arguments will enable us to identify the many socio-cultural factors in North

[559] *Cf.* Harding 1976, 1983, 1986, 1992, 1993, 1994; Harding & O'Barr 1987.

Atlantic science, specifically from three complementary critical perspectives:

- social and cultural science studies as conducted in the North;
- social and cultural science studies as conducted in the South;
- and the feminist perspective.

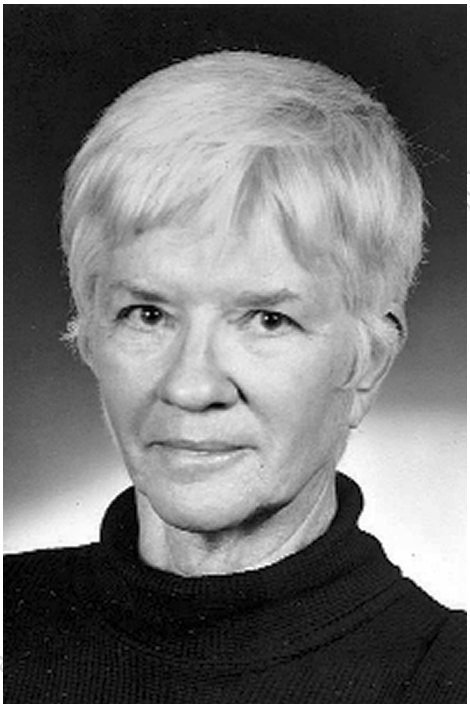

Fig. 13.1. Sandra Harding.

This will enable us to expose, to some extent (but by no means totally) the three classic internal epistemological characteristics on which the superiority claim of North Atlantic science is based (notably: rationality, objectivity, and universality), as hegemonic expressions of Eurocentrism and North Atlantic delusions of superiority. We will seek to identify the social and political processes which have contributed to the appearance of North Atlantic science as rational, objective and universal, especially in the context of European expansion from Early Modern times on. However, we shall also try to follow Harding where she argues that these social and political contingencies, however obvious and important, are

insufficient to totally account for such rationality, objectivity and universality as are claimed for North Atlantic science. North Atlantic science will retain its appearance of valid and well-grounded knowledge, not only because of its specific social and political background in the context of world-wide North Atlantic hegemony, but also, after all, because its internal epistemology stipulates procedures which ensure that a considerable measure of rationality, objectivity and universality is actually realised, by whatever standards.

In the second part of this Chapter I return to the attractive and plausible thought that also other ethno-sciences from all over the world, regardless of their wrapping as *'pensée sauvage'*, must necessarily contain a core of valid knowledge about nature. Can this core be isolated and accommodated within North Atlantic natural science? Will it represent an enrichment to the latter, or must we assume that any valid knowledge about nature to be found in other ethno-sciences, must inevitably already be present in modern North Atlantic science? Strictly speaking, also such a formulation already takes too much for granted the privileged position of North Atlantic natural science, and it would be better to reformulate our question in the following terms:

> *can such valid knowledge about nature as we may expect other ethno-sciences than the North Atlantic one to contain, be accommodated within a world-wide system of knowledge about nature to which also North Atlantic science is to contribute and into which it is eventually to merge while losing much of its present-day distinct identity?*

Harding has an argument akin to that concerning biodiversity in the biological sciences: because every ethno-science is to meet the challenges of a more or less unique local variation of nature's possibilities, and because every ethno-science carries its own societal and cultural orientation, it is quite probable that in other ethno-sciences (than North Atlantic science) forms of knowledge about nature are stored which are not only valid, but which have not yet been recognised by North Atlantic science and which therefore are to form a valuable addition to North Atlantic science.[560]

Harding's experience with other ethno-sciences than the North Atlantic one is only abstract, theoretical, and based on the testimony of others rather than first-hand. This may be the reason why she is strikingly silent on the point of how we are to visualise such an enriching meeting and conversation between North Atlantic science (whose internal epistemological justification will have been affirmed, albeit not without socio-political and historical qualification, in the first Section of this Chapter) and other ethno-sciences. My experience is different in that I can claim competence in at least on other ethno-science that

[560] A clear example of this possibility we shall meet below, in Chapter 16 on *wisdom*: the inhabitants of Madagascar have 'always' been familiar with the Coelacanth fish specious which yet had to come as a great discovery to the international world of science in the 1930s CE.

the North Atlantic one: the world-view and therapeutic system of the Southern African *sangoma* complex. This perhaps enables me to approach the question as to the meeting of African and North Atlantic sciences in more detail.

It will turn out that the analysis of *sangoma* science[561] will lead us far away from contemporary modern Southern Africa. Underneath the Southern African forms we shall detect historical and geographical continuities in the light of which we are scarcely justified to speak of a truly independent and distinct knowledge system, not only with reference to *sangoma* science, but also with reference to North Atlantic science. *Sangoma* science and North Atlantic science will turn out to be branches on the same stem, whose roots lie in the Ancient Near East. Even more important however than this historical argument would be the development of a framework within the philosophy of science that will enable us to systematically compare both forms of science. That is too great a task in the present scope, and for me, except for one point. Both forms of science stipulate a different selection of sources of knowledge, and I shall argue that in this way each science, in its own right, constitutes a different, but potentially valid, window upon the same underlying reality which, presumably,[562] we all share. While this amounts to a rather strong realism, it also prepares the ground for an argument that cannot be avoided in the present context: that on epistemological and cultural relativism. My relegating both North Atlantic science and *sangoma* science to a protracted historical process of systematic, specialist knowledge production encompassing the entire Old World (at least) and five millennia, already shows that I am not a relativist in the strict sense. I esteem African rationality not for its Africanity but for its rationality. The idea that there should be a different epistemology for different cultural orientations, can only reinforce such inequalities in power and resources as characterise the modern world. If we were to uncritically affirm that it is simply the superior internal epistemological underpinning of North Atlantic science by virtue of which the latter's claims to rationality, objectivity and universality are widely accepted, and not also socio-political and historical factors, then again we risk to relegate South sciences back to the ghetto – for their internal epistemological underpinning is far less manifest. The way out appears to be the construction of a model of valid systematic knowledge about nature, to which various knowledge traditions all over the world (including North At-

[561] My similarly titled book in progress, *Sangoma Science*, will not dwell on the global geographical ramifications of knowledges, which in view of previous work I think I can take for granted, but will work out the problematic indicated with a somewhat different emphasis, on method and theory.

[562] My qualification 'presumably' is not merely facetious. To the extent to which there is something out there which is imposed on us and which confronts us, that experience of reality would be common to all cultures. However, to the extent to which culture is reality-creating (even, to the extent to which each individual creates her or his own specific reality), we must question this convergence of reality as external and one.

lantic science) may contribute under the assumption that they deal with by and large the same reality in ways which are to be judged by the standards, not of so many relativist epistemologies, but of one unitary epistemology, in the light of which all knowledge traditions, including North Atlantic science, are likely to fall short in one respect or another.

One elaborate example of this is presented in Chapter 7 of my *Intercultural encounters*, referred to above, with regard to extrasensory sources of knowledge; similar ground is covered in Chapter 15 of the present book, where again I try to construct an epistemological argument for the possibility of veridical divination. While inadmissible from the sensorialist perspective of North Atlantic modern science, extrasensory sources of knowledge are admissible for most other knowledge traditions in the world, and – most remarkably – do seem to come within reach, do seem to open themselves to be tapped (as I have experienced over the decades as a practising *sangoma*), once one effectively and expertly adopts the perspective of one of such non-North-Atlantic knowledge traditions. *Sangoma* science will turn out *not* to be a local idiomatic formulation of such valid knowledge as is also, and better, contained in North Atlantic science, mixed with untruths that cannot be accommodated in the latter. *Sangoma* science recognises sources of knowledge not acknowledged in North Atlantic science: intuition, dreams, and especially extra-sensory perception. It is my conviction, based on hundreds of experiences as a practising *sangoma* (some of which have been meticulously recorded and analysed), that this acknowledgement of additional sources of knowledge allows us to unlock such valid information which these sources have to offer, and thus to enhance both our specific knowledge on the specific points thus disclosed, and our general knowledge of how nature is organised, also in addition to, and beyond, North Atlantic science.

But we have not by far reached that conclusion yet. Let us first return to Harding's argument.

13.2. Harding's argument

In the first place, Harding seeks to answer the question as to how we can still take seriously modern North Atlantic science's claims to universality, objectivity and rationality, after a spate of research since the 1960s in such fields as the social organisation and the cultural orientation of science has given us compelling reasons for the view that contemporary science has been formed by the practices and the cultural orientation of its practitioners – and most profoundly so, not only in its accidental forms but also in its cognitive essential contents. The claims of universality, objectivity and rationality are manifestly part of the practices and cultural orientations of the practitioners of North Atlantic science, and in that

light the recourse to a superior epistemological underpinning that would have produced such objectivity, rationality and universality, may well be perfunctory.[563] These claims may be no more than expressions of a Eurocentric claim of superiority, and the mere possibility of them being just that deprives them of much of their authority. Despite all its successes in describing, understanding and technologically controlling the world, also modern North Atlantic science may thus see itself to be reduced to the status of an ethno-science.[564]

Speaking of the undeniable success of North Atlantic science we do not just mean the plurality and the depth of discoveries, and the efficacy of their practical applications, but especially also the disconcerting observational fact (disconcerting, at least if we insist that also North Atlantic science is an ethno-science) that that science turns out to retain a high degree of validity far away from the geographical location where it was first formulated.

Let me give some examples on this point. Probably no member of the circle of North Atlantic philosophers of science expects that the totemic classifications of natural species in Australian Aboriginal societies, which Lévi-Strauss (1962a, 1962b) cites as a brilliant example of 'the science of the concrete', contains valid knowledge which may be applied for the management of Australian-imported Marsupialia in Dutch zoological gardens, and may govern their housing, veterinary regimes, feeding routines, *etc*. is such conditions of foreign captivity. On the other hand (and I have used this example in the Introduction to the present book) we are certain of one thing: the aeroplane which, based on a technology that is underpinned by North Atlantic scientific knowledge, takes the Dutch Marsupialia[565]-specialised zoologist to Australia, and back, will *not* crash somewhere above the Middle East *merely because* at that geographical point it leaves the cultural region that has seen the first formulation of the principles of aerodynamics, the jet engine, aluminium construction, on-board radio, and radar. By any standards it is rather unlikely that the aeroplane will crash: against the billions of aviation movements (single events off taking of and touching down) since the inception of aviation, there would be only ten or twenty thousand crashes at most. If the aeroplane carrying the zoologist must

[563] This concerns what Harding calls 'main-stream Northern social and cultural studies of science and technology', *cf*. Callon & Latour 1981**;** Cartwright 1983; Dupré 1993; Fausto-Sterling 1985; Feyerabend 1975 (but his *quasi*-postmodern methodological anarchism is evidently rejected both by Harding and by me); Haraway 1989; Hayles 1992; Keller 1984; Kuhn 1970; Latour 1987, 1988, 1993; Latour & Woolgar 1979; Nandy 1990; Pickering 1984, 1992; Proctor 1995; Rouse 1987; Schuster & Yeo 1986; Serres & Latour 1995; Shapin & Schaffer 1985; Turnbull 1993; and Sandra Harding's own work as cited above.

[564] Ethnoscience (or what Harding calls 'comparative ethnoscience approaches') represents a movement that was initially independent from the 'main-stream Northern social and cultural studies of science and technology'; *cf*. the previous footnote.

[565] My use here of the North Atlantic scientific terminology for such animals is a conscious form of violence, meant to bring out the inequality and hegemonic tendencies inherent in the naïve comparison of local ethno-sciences.

crash after all, it will be because of a human error in navigation, because of bad weather (*i.e.* human failure to submit nature lastingly and under all circumstances), or because it is shot down, in other word crashes as a result of human violence in protest against such perceived arrogance and subjugation as may characterise the North Atlantic scientific-technological-military-economic complex in the eyes of local, ideologically motivated aggressors.

However, on closer scrutiny the question is far more complicated. As Lévi-Strauss has made clearer than any other author (1962b), totems are aspects of the natural world which have locally been thought to lend their names to social groups, so that the distinctions between these groups become thinkable in terms of the distinctions between totems. For instance[566] in South Central Africa[567] the distinction between the Bee clan and the Firewood clan may be understood from the fact that it is with the smoke from firewood that wild bees are chased from their hives so that their honey may be gathered. Bee clan and Firewood clan are each other's opponents, their respective members are involved in joking relationships, expect to be buried by one another and not by members of other groups, and in these respects the two groups have more in common with each other than with the other groups in the local society. Neither in South Central Africa, nor in Australia, are totemic distinctions strictly local: they constitute a societal knowledge which (according to specific transformations that makes for superficial discontinuity within an underlying continuity of deep structure – Lévi-Strauss) extends over large parts of the African and Australian continent respectively, across thousands of kilometres.[568] Totemic distinctions thus are far from local. In their combination of knowledge about nature with societal knowledge, totemism is a typical form of ethno-science.

And more in general it is true that many fields of knowledge outside North Atlantic science may have continental and even intercontinental distribution.

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[566] In this example I ignore, for clarity's sake, the third totem / group that may be involved in such a totemic arrangement among the Nkoya people; *cf*. van Binsbergen 2012d.

[567] van Binsbergen 1992b, 2012d.

[568] Armstrong's (1961) assertion that totemism has only a very limited occurrence in Africa (he mentions only the Baganda of Uganda) is only saved by a very restrictive definition of the phenomenon. If we define totemism, along Lévi-Straussian lines, *as a social classification system based on binary oppositions between named aspects of the surrounding non-human world*, then the phenomenon is very widespread indeed in Africa, the clan (named after a locally recognised totem) being a conspicuous unit of social organisation throughout the Bantu-speaking realm, and well beyond. A generous selection from the vast literature: Aguessy 1983; Ankermann 1915**;** Beaton 1936; Comaroff & Comaroff 1992b**;** d'Hertefelt 1971; Driberg 1939; Ejiofor 1981; Fortes 1945a, 1945b. Further on clans: von Sicard 1950, 1962; Griaule 1957**;** Hartland 1915; Haudricourt 1964; Lopes 1945; Moret & Davy 1926 / 1923; Newbury 1980; Quintino 1964; Schlee 1989; Seligman n.d.; Willoughby 1905. In Zambia, for instance, totemic clans are ubiquitous and have been treated in passing in much of the extensive ethnographic literature, usually under the heading of 'clanship'; Apthorpe 1959; Munday 1960; White 1957**;** Jaeger 1973; Doucette n.d.; Cunnison 1950, 1959; van Binsbergen 1992b: *passim*, and 2012d.

Inspired by my concern to complement Harding's argument on the ubiquitous geographical distribution of modern science by a similar argument concerning systems of knowledge outside the North Atlantic, I undertook extensive analyses of systems of animal symbolism, and much to my surprise I found very extensive patterns of intercontinental continuity going back to the Neolithic or the Upper Palaeolithic.[569] The Egyptologist and comparative religionist Stricker (1963-1989) has convincingly argued in his life's work *De Geboorte van Horus* [*The Birth of Horus*] that the representations concerning life force, conception, heredity, pregnancy and birthing manifest a striking continuity all over the Old World, as can be found illustrated in most ancient literatures (those of Ancient Egypt, Ancient Greece, Ancient Rome, Ancient Iran, Ancient South Asia, and Ancient North-Western Europe). A similar argument, but far more one-sidedly phallic, and much less impressively documented, is to be found independently with the Assyriologist and Biblical scholar Allegro (1970). He bases his pronouncements for the entire Ancient Near East mainly on the Sumerian language, which introduces (besides Chinese) one of the few ancient literatures that were omitted from Stricker's argument. The latter's work converges with the far more systematic Assyriological study by Stol with Wiggermann (1983), undertaken in direct and intended complementarity to Stricker's. Much of the same knowledge domain was available in Ancient China.[570] In a similar fashion one can trace the distribution and development of ancient 'secret sciences' in the field of divination (and these are in fact the earliest forms of systematic science, comprising astrology along with many other forms of divination) all over the entire Old World including Africa.

A further example may derive from the field of mythology. Most North Atlantic philosophers of science would not expect to find valid knowledge about nature in religious systems of knowledge, including mythology, but of course from the point of view of non-North Atlantic ethno-sciences it is precisely in such systems of knowledge that we may expect the most valid knowledge about nature to be enshrined and transmitted. Therefore it is important to realise that also such knowledge systems tend to have a very wide distribution. Thus the world of the gods and its associated stories, such as we find in the well-known Ancient Greek myths, turns out to have – in all sorts of transformations which, once again, make for a great pluriformity on the surface but underneath of which lurks a converging deep structure – a distribution (*of which the Ancient Greek attestations are certainly not the origin, but only one among many surface manifestations*) all over Ancient Europe, North West Africa, South and West Asia, with parallels right into China, Japan, and even the New World. An example of such mythological continuities is given in Table 13.1, which lists for these various regions of the world, schematically and selectively, the distribution of one mythologi-

[569] *Cf*. van Binsbergen 2002c and in press (d), as well as 2003k, 2004d, and in press (h).

[570] Needham with Wang Ling *et al*. 1956 -, numerous volumes.

cal central theme: that of the battle between the hero and the monster.[571]

P. COMBAT IN COMPARATIVE MYTHOLOGY: NOTE TO THE FOLLOWING TABLE: *In view of the overwhelming richness of the globally available data, I have confined myself to presenting the data from only one, reliable and well-referenced source, namely Fontenrose's (1959 / 1980) inquiry into the Delphic foundation myth.*[572] *The fact that these data have a world-wide distribution does not in itself confirm the hypotheses (however obvious and tempting) that these myths have diffused from one unique geographical origin. For one could equally plausibly maintain (as Fontenrose does in his conclusion) that the struggle on which this mythical complex centres, takes place time and time again in every human being in her or his own right, or at least finds resonance in every human being, and that as such this struggle is simply a reflection of the universal human condition, which can hardly (unless with the African-Eve Hypothesis) be tied to one specific origin in space and time. From a rather different perspective, one might reject the approach in Table 13.1 on the grounds that, given the richness of narrative free variation attending all of the myths involved in this complex, each of the individual personages parades here is in fact incomparable to all others; in that perspective, the reduction which is applied here (to the simple schema 'hero versus monster') would be absurd, would commit violence to the literary value and contents of these myths. My answer to such dismissiveness would be that structuralist analysis of myths (which we owe in the first place to Claude Lévi-Strauss, 1964-1971, 1968, 1979) has acquainted us with the thought that, underneath the narrative surface structure of the various individual myths (a surface structure which we can investigate in its own right) we can detect simple schemas that are recurrent in space and time. Making these schemas explicit enables us to recognise the unity underlying the plurality and pluriformity of myths. However, since this was first written (2001) I have done much more work on comparative mythology, and (contrary to Fontenrose, who in the conclusion of his impressively comprehensive 1980 / 1959 study saw no alternative but to rush through the open door of the universal and timeless human experience as a form of struggle) I have found a middle ground between that (fairly uninteresting) universal level and the narrative divergence of the combat myth in so many different local contexts: in my book* Before the Presocratics *(van Binsbergen 2012d; cf. 2009c, 2010d) I show that all these forms of combat, at one level of analysis at least, may all be read (just like the many forms of* metamorphosis *narrated by Ovid – as well as the transformations on which the Chinese* Book of Changes */易經 yì jīng ('I Ching') revolves) as narrative expressions of a very wide-spread cosmology of cyclical element transformation, underlying world-views, clan systems and divination systems in many parts of the Old World, and even the New World, since the Early Bronze Age, and in its earliest and least sophisticated form, since the Upper Palaeolithic. Thus, the combat is, among other referents, the forceful and transformative influence of element A on element B, by which B metamorphoses into another element, C. Incidentally, Ancient Greek material is unavoidably over-represented in Fontenrose's corpus; it is such material which also offers (that is, within the confines of that corpus) the only window on North Africa and Africa South of the Sahara. For a simple illustration this is no serious defect provided we realise within what kind of self-imposed constraints we are conducting our analysis.*

[571] In the same vein Ginzburg has argued that converging representations concerning witches, ancestors and ecstasy have an even wider distribution (Ginzburg 1966 / 1986, 1992 / 1989).

[572] We may list the following sources here (Tripp 1974; Graves 1964: 79): Hyginus (1872), *Fabula*, 140; Apollodorus, *Bibliotheca*, I.4.1; *Homeric Hymn to Apollo* (see Hesiod *etc.* 1914), 300 *f.*; *Scholiast on Apollonius Rhodius*, II, 706 (*non vidi*).

	selected		
regions	**protagonists (italics = ♀)**	**enemies (italics = ♀)**	***passive heroines (italics = ♀)***
Africa	Perseus	Ketos	*Aso*, *Andromeda*
Egypt	Ammon, *Athena* / *Neith*, Geb, Horus, *Isis*, Min, Osiris, Ra^{c}, (Seth), Thoth, *Uto*, *Anat*, *Ašerat*,	Apep, Bata, Busiris, the Sea, Seth, (Thoth), *Anat*, *Ašerat*,	*(Isis)*, *Nut*
Canaan, Israel, Ugarit, Syria	*Anat*, Aqhat, Ba^{c}al, *Beltis*, El (Il), *(Judith)*, Kadmos, Melqart, *Paghat*, Perseus, Phoenician heaven god, Yahweh	Holofernes, Humbaba, *Judith*, Ketos, Leviathan, Mot, Orontes, Phoenician Hawk Dragon, Satan, Tannin, Yam, Yatpan	*Andromeda*, *Ašerat*, *Kassiepeia*, *Omphale*, *Phoenician earth goddess*
Anatolia, Cilicia, Hittite Empire / Ḫatti, Cyprus	Ba^{c}al Tarz, Hittite Weather God, Hupasias, *Inaras*, Kumarbi, Marsyas, Perseus, Sandon, Tešub, Telipinu	dragon, Illuyankas, *Medusa*, Okeanos, Syleus, Typhon, Ullikummi, Upelluri	*Aphrodite*, *Semiramis*
Mesopotamia	Anu, Ea, (Enkidu), Enlil, Gilgameš, *(Inanna)* / *(Ištar)*, Lugalbanda, Marduk, Nergal, Ninurta, Šamaš, Tammuz	Apsu, Asag, Bilulu, (Enkidu), *Eriškigal*, (Gilgameš), Girgire, Humbaba, Imdugud, *Inanna* / *Ištar*, Kingu, *Labbu*, Seven Demons, *Tiamat*, Zu	
India, South East Asia, Persia	Fredun = Thraetaona, Indra, *(Kaikeyi)*	Azi Dahaka, *Danu*, Garuda, *Manthara*, Nahusha, Namuci, Ravana, Sinhika, Viparupa, Vritra	*(Kaikeyi)*
China	Chu Yang, Li Ping, No Cha, Shen Yi, Yi, Ying Lung, Yü	Ch'ih Yu, Chu Wang, dragon, Fung Po, Ho Po	*Hsi Wang Mu*
Japan	Agatamori, Amewakahiko, Izanagi, Raiko, (Susanoo), Takemikazuchi	Susanoo	*Amaterasu*, *Izanami*

North Africa and Southern Europe	Athena / Neith, Herakles, Melqart, Perseus	Antaios, Atlas, Cacus, Evander / Faunus, Geryon, Ophion	
Greece	Apollo, Artemis, Athena, Dionysos, Erechtheus, Erōs, (Hekate), Herakles, (Hermes), Io, Kadmos, Kronos, Pan, (Poseidon), Ouranos, Zeus [Keraunios][573]	Acheloos, Aigis, (Apollo), Ares, Delphyne, Despoina, Diomedes, (Dionysos), Drakon, Echidna, Gigantes, Glaukos, Hades, Hekate, Hera, (Herakles), (Hermes), Hydra, Kampē, Kepheus, Keto, Ker, (Kronos), Kyknos, Lamia, Laogoras, Laomedon, Linos, Neleus, Ocean = Okeanos, Ogygos, Pallas, (Perseus), Phlegyas, Phorbas, Poinē, Poseidon, Python, the Sea, Sphinx, Styx, Sybaris, Tartaros, Telphusa, Thanatos, Thetys,[574] Titans, Tityos, (Ouranos), Zeus [Ŧthonios], Zeus' hawk[575]	*Artemis, Deianeira, Demeter, Gē, Io, Kelto, Leto, Moirai, Persephone, Rhea, Xenodikē*
pre-Christian Northern Europe	Bearson, Beowulf, Hagen, Odinn, Ogier the Dane, Parzival, Sigurd / Siegfried, Sigmund, Thor	dragon, Fafnir, Firedrake, Grendel, *Grendel's Mother*, *Hel*, *Holda*, *Lorelei*, Midgard Snake, Regin-Mimir, *Valkyrie*, *Venus*, *Ymir*	*Audumla, Brynhild, Krimhild, Lohengrin*
Christian Europe	St Evenmar, St George, St Michael	Satan, St George's dragon, the Woman of *Rev*. 12 & 17	
the Americas	Coyote, Gucumatz, Hunahpu, Xbalanque, Tahoe	Nashlah, Xibalba, Vucub-Caquix, Wishpoosh	

Table 13.1. World-wide continuities: The battle between the hero and the monster.[576]

At the moment that they are formulated, applied, transmitted and attested, systems of knowledge can only manifest themselves as strictly local, as more or less embedded in a local cultural orientation and in local practices. Yet these local forms are often to be recognised as the results of *transformative localisation*: the embellishment and reformulation, more or less in local cultural terms, of knowledge which in fact comes from elsewhere and which may have a wide regional, even global, distribution. Through the

[573] Many names could be added here, *e.g*. Agenor, Argos, Eurybatos, Euthymos, Koroibos, Lykos, Pyrrhichos, Silenos.

[574] Thetys, a Titaness goddess of the primal sea, closest to the mytheme of the Mother of the Waters; often considered the grandmother of Thetis wife of Peleus and mother of Achilleus. In many accounts Thetis and Thetys merge.

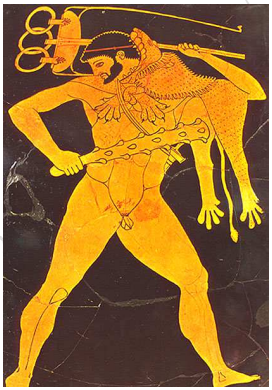
[575] Many names could be added here, *e.g*. Admetos, Akrisios, Aktaion, Amykos, Amyntor, Asklepios, Autolykos, Dryopes, Erginos, Eurynomos, Eurypylos, Eurytion, Eurytos, Euphemos, Geras, Heros of Temesa, Koronos, Ladon, Laistrygones, Lakinios, Lityerses, Lykoros, [Peri-]Klymenos, Phineus, Phorkys, Polydektes, Satyros, Theiodamas, Tiphys, Titias.

[576] Compiled on the basis of scattered information in: Fontenrose 1980 / 1959, where also the relevant sources are identified.

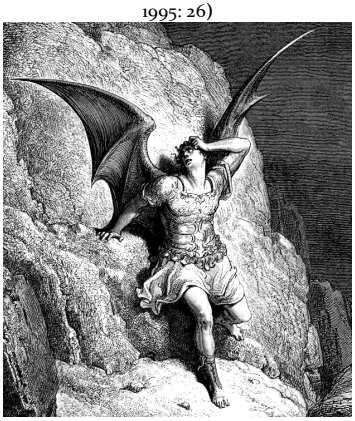
centuries, the mythical themes of Table 13.1 have given rise to a very rich iconography, a very small selection of which I present in the following pages. The considerable variation in size of pictures and captions precludes a more logical chronological or geographical order in the presentation. What emerges is the awareness that, despite the rich variation in conception and execution, we are possibly in the presence here on a *global* mytheme – pre-scientific knowledge shared almost over the entire globe.

1. Izanami and Izanagi in a three-volume Japanese book containing stories of the creation of Japan, probably *Kojiki*, held at the Library of Congress of the USA (source: http://www.loc.gov/exhibits/world/images/s13p4.jpg)

2. The River Dragon, on whose back the culture hero Fu Xi (right) discovered the *pa kua* or Eight Trigrams fundamental for the Ancient Chinese world-view (T'ang dynasty) (Cherry 1995: 26)

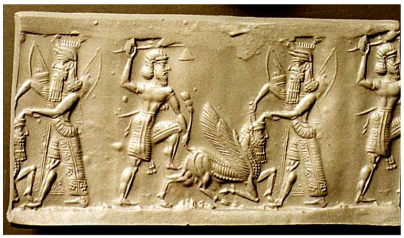


9. Herakles seizing the tripod at Delphi, detail from an Athenian red-figure clay vase, about 480 BC, © Martin von Wagner Museum, Würzburg University; source: http://www.beazley.ox.ac.uk/CGPrograms/Dict/image/herakles.jpg)



10. Satan in the 19th-c. CE depiction of Gustave Doré (source: Anonymous, 'Satan', at: http://en.wikipedia.org/wiki/Satan

3. Babylonian cylinder seal: The battle of Tiamat and Marduk (source: http://www.mythofcreation.co.uk/images/tiamat.GIF)

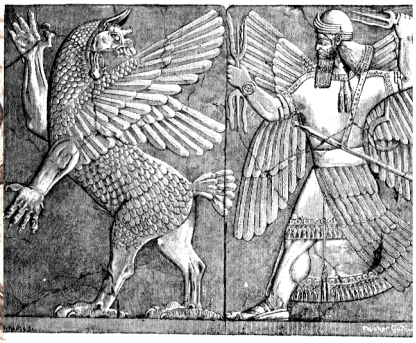


4. The Gilgameš cylinder seal (MS 1989), Assyria, ca. 7th c. BCE; www.schoyencollection.com/media/djcatalog2/images/the-gilgamesh-cylinder-seal_f.jpg

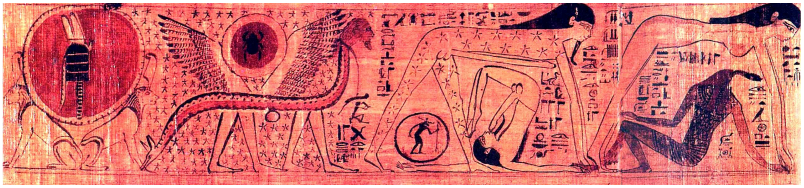
5. Sumerian 'Cylinder of Adda' depicting the god Ea / Enki, held at the British Museum B.M. 89115

6. The goddess Inanna depicted on a Sumerian incense burner, with snakes, leopards and bulls (www.enenuru.net/sheshki/board/020218060 0_1024.jpg)

14. *Apollo Killing Python* (1589; Anonymous after Hendrik Goltzius, Netherlands, 1558-1617) (source: http://www.wesleyan.edu/dac/imag/1968/0029/0003/1968-29-3-0013-m01.html



15. Bel-Merodach / Marduk, armed with the thunderbolt, does battle with the tumultuous Tiāmat (Maspero / Sayce 1906: III)

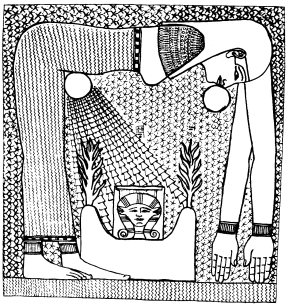


11. Ancient Egyptian magical papyrus now held at the British Museum, London, United Kingdom, with composite and occult depictions of dragon, snake, dung beetle  Ḫpri, star-spankled Nut with a male self-fertilising body (reminiscent of the cosmogonic myth of Atum's masturbation), Nut, Geb in a self-fertilising posture, Geb as snake (throughout the Old World there is a close conceptual and even lexical relationship between 'earth' and 'snake'), the sun disc (inscribed in which is Amun's headdress) supported by two lions (often identified with Shu and Tefnut), *etc.*

7. Horus depicted as falcon on the stele of King Snake, 1st dynasty Egypt (source: http://www.louvre.fr/img/photos/collec/ae/grande/en007.jpg)

8. Ancient Greek stele of Apollo and Hermes (source: http://www.forthnet.gr/olympics/athens1896/pictures/docs/herms.html

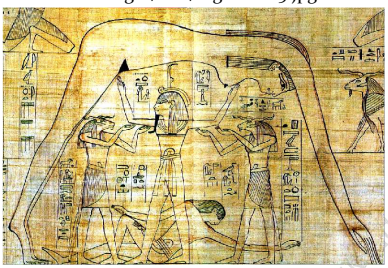
18. Saint Michael in the Breviary of Martin of Aragon, a 15th Century CE European illuminated MS (ROTH 2529) held at the Bibliothèque Nationale, Paris, France (source: http://www.bnf.fr/enluminures/images/jpeg/i8_0072.jpg)



20. The goddess Nut through whose body the Sun (⊙) passes from vulva to mouth, against the background of the starry sky, while sending its rays (individually palm or reed stems consisting of tapering segments) over the corn-covered (𓇋) mountain (𓈎) of the goddess Hathor (identified by her coiffure ending in two spirals), *i.e.* Egypt (source: http://www.jbeilharz.de/ellis/egypt.html)

21. Hera gathers the eyes of Argos, 17th c. CE drawing, Europe (source: http://homepage.mac.com/cparada/GML/00oImages/aim/argus1-2615.jpg

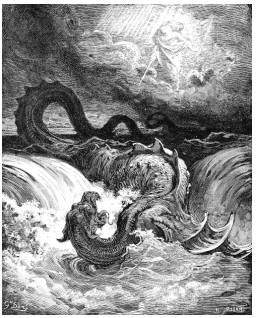
19. One-eyed Odinn on his eight-legged mount, wielding lightning (Anonymous, 'Óðinn')



12. Ancient Egyptian papyrus representing the air god Shu separating the gods Geb (Earth) and Nut (Heaven); source: http://ivizlab.sfu.ca/arya/Gallery/Egypt/Geb_Nut.jpg

13. Pygmy fighting a crane on an Ancient Greek vase; Anonymous, 'Pygmy (Greek mythology)'

16. A Mesopotamian magical tablet: Nergal, the god of Hades (Maspero / Sayce 1906: III)



17. Gustave Doré's depiction of the Biblical theme of the destruction of Leviathan by Yahweh (source: Anonymous, 'Leviathan', at: http://en.wikipedia.org/wiki/Leviathan)

Table 13.2. Selected iconographic representations of the mythemes listed in Table 13.1.

13.3. Epistemological underpinning or socio-political and historical contingency?

But let us return to our principal topic in this Chapter, which is not the amazing global spread of mythemes, but the amazing global spread of science.

Until a few decennia ago it was customary to explain the unmistakable success of North Atlantic science by reference to its internal epistemological superiority: its rationality, its unique logic of argumentation, its universal language, its methods which guarantee objectivity, *etc*. When this explanation was rendered less convincing, other explanations had to be offered for the same success. Harding's point of view is not, of course, the discovery – already accepted decades ago – that North Atlantic science is socio-culturally determined, but *her qualified unease with the reductionist explanation given ever since for the success of North Atlantic science, notably those in terms of European expansion, North Atlantic hegemony etc*. She wishes to assess if, despite the existing and well-taken socio-political and historical critique, it might yet be possible to retain the internal epistemological characteristics of North Atlantic sciences (*i.e.* the claims of universality, objectivity and rationality) to some extent, in an adapted form. Here she lets herself be inspired, among other things, by two critical schools of research that were triggered, not by the desire to denounce North Atlantic science, but by the desire to purify it from limitations that usually remain masked and unnoticed, but that, if removed, would allow North Atlantic science to realise much more convincingly its value – a value which these studies do not deny and whose epistemological basis they are even to some extent prepared to accept. These two schools are:

- feminist studies of science in the North Atlantic region, and
- studies of the transfer of North Atlantic science to 'the South'.

The argument in question turns out to consist of a number of tiers. I reconstruct this multi-tieredness with somewhat more emphasis than Harding does.[577]

- In the first place, because science generates power, women and inhabitants of 'the South' do not wish to be excluded from it, they do not want to be short-changed with an adulterated selection which is made and lastingly controlled by others (men, 'the North'), and they prefer to bring into that science as much as possible of their own cherished representations.
- But especially this last, cultural point reveals an important second motivation. These previously underprivileged groups are not after raw power but after legitimate power: authority, dignity and self-respect. If science has to be one of the roads to reinforcing the identity and the

[577] At least in the beginning of her argument, however, also see Harding 1997: 59 *f*.

self-determination of those groups of humankind that were hitherto vulnerable and oppressed, then the last thing we need is a science that has just been reduced to a local belief system, substantively contingent and therefore with no credible claims to truth any more – not a science that has been deprived of its most impressive characteristics, and cast onto the dung pile of history, the very moment that it comes within reach of these previously excluded groups. Quite on the contrary, under such circumstances of re-empowerment, science ought to appear as endowed with the greatest possible intrinsic value, notably by restoring the traditional claims of internal epistemological superiority, or by replacing them by similar but equally powerful claims.

- Finally a third motivation: in order to be allowed to play along in the scientific game, *i.e.* to be eligible for scholarships, publication of one's writings, funding of research, senior appointments, those who were previously excluded cannot afford to make light with the internal epistemological criteria imposed by the scientific establishment – on the contrary, they have to present themselves as *more rational, more objective and more universal* than their male and / or Northern colleagues. Here we witness in a most convincing (and moving) way Harding's own struggle as a feminist and anti-racialist philosopher of science.

This type of intellectual movement, and the dilemmas of which it is the expression, we know only too well from the present-day dynamics of intellectual self-positioning within the globalisation of knowledge production, and the critical reflection upon such globalisation.

Let me give another example of the same movement. Today's two most prominent African cosmopolitan philosophers, Kwame Appiah and Valentin Mudimbe, who have attained great mastership and recognition in the circle of North Atlantic knowledge production, have shown themselves to be critical but by and large very tolerant of those circles. The only thing for which they apparently cannot summon such tolerance is the widespread tendency, among African and African American intellectuals, to embrace the popular cultural historical representations celebrating Afrocentrism, and both ethnic and pan-African essentialism. Obviously Appiah and Mudimbe detect here the same pitfall as we have seen detected by Harding, the post-colonial science researchers, and the feminist critics of sciences. *For Appiah and Mudimbe, people in or from the South must no allow themselves to be short-changed, must not resign themselves to an obsolete, dismantled, simplistic, or ideologically perverted version of such scientific knowledge as circulates globally*. For has not state-of-the-art science sufficiently demonstrated that all ethnic and racial identity is mere constructed and illusory?[578] But neither this is the entire story. This honestly

[578] Thus rephrased, we may also begin to appreciate the integrity of Mary Lefkowitz (demon-

responsible and didactic attitude on the part of our cosmopolitan African philosophers does not do full justice to the entire range of variation, nor to the existential intensity and inescapability, of identity constructions among their Black colleagues, nor to the facts of intercontinental cultural history – for here Africa does appear, pretty much in the way as popularly claimed by the Afrocentrists, as a relative cultural unity, and as one of the few most important historical focal points of cultural innovation in the history of humankind.[579] Much in the same way, the South and feminist attempts to salvage North Atlantic science by affirming, once more, its internal epistemological superiority, may conceivably be relegated, largely, to these authors' quest for dignity, – a strategic interest that does not make them the most credible advocates of North Atlantic science's epistemological superiority in the face of the abundance of evidence of, instead, socio-political and historical factors explaining away such a superiority claim.

These are dilemmas which, as we shall see, Harding is incapable of resolving. Nonetheless she sets out on her quest to formulate, once more, convincing epistemological standards for North Atlantic science, even though the older, internal epistemological standards appear to be denounced as Eurocentric. She does this in three steps:

- She assesses the characteristic ways in which, from a South perspective, 'European' (North Atlantic) sciences appear to constitute mere local knowledge systems
- She invokes the local nature of *all* approaches in science studies, and
- She identifies the need for a powerful epistemology from the perspective of South social and cultural studies of science and technology.

Harding justifies the great simplifications and omissions of her argument by pointing to its intended gains, which she sees as:

> 'the gain of a kind of map in which diverse science studies approaches can be seen each to contribute distinctive resources to more accurate and comprehensive understandings of relations between natural knowledge and social power. It is precisely the lack of such a map, I suggest, that has left obscure important relations between histories of sciences and of cultures.' (Harding 1997: 48)

Referring to North social and cultural studies of science and technology since the late 1960s, Harding affirms that no science can avoid reflecting its own socio-cultural environment. There is not one scientific theory that is dictated

ised by her Afrocentrist opponents especially Martin Bernal) and her battle against Afrocentrism and the *Black Athena* Thesis: as a feminist in classics, she finds it unacceptable that African Americans, near the culmination of their long trajectory to full educational access, should be short-changed with an Afrocentrist version of Ancient History that, however consciousness-raising, is (in her eyes) simply untrue.

[579] *Cf.* Appiah 1993; van Binsbergen 1997a / 2011e, 2000b, 2001 / 2005a (reprinted in this book as Chapter 12), 2012d.

directly, cogently and without the slightest prejudice, by the evidence (Quine 1953); it is this very fact which makes possible a continuous process of scientific innovation, and the choice between rival theories always involves a complex and opaque process in which forms of social organisation and power relations play a substantial role. Thus the specific characteristic of the local society and local cultural orientation may have an important influence upon the grown of science. In principle it is possible that also scientific theories from other cultural traditions than the North Atlantic one may compete in this game of *competitive plausibility*, even in the case of the natural sciences.[580]

But while this makes sense at the abstract level, as a theory of the relationship between knowledge production and the society in which it take place, this is far too deterministic to be convincing. If we agree that all systems of specialist knowledge production constitute ethno-sciences, including North Atlantic science, then they all situate themselves in a field of tension between

- on the one hand, knowledge about nature (which has to be valid, at least in part, in order to support such effective extraction from nature – *i.e.* production – on which the reproduction of society and its members depends), and on the other hand:
- societal knowledge, which is in principle symbolic, creative, and subject to free variation.

Against the broad systematic, long-term tendencies that produce the right science and technology when society is ripe for it (of which numerous examples could be cited),[581] there is the free play of the imagination, of idiosyncratic fascinations and experiments, that is not, or only much later, or only in a very different place, picked up by the great movements of society in history. Let us consider a few examples:

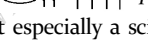
- The celebrated history of European science in Antiquity and the Middle Ages (Bernal 1969; Reymond 1963 / 1927; Sarton 1952; Störig 1965; van der Waerden 1974; Williams & Williams 1904; Thorndike 1923-1958);
- the history recounted in *Science and Civilisation in China* (where the prerequisite academic knowledge was available in abundance, yet without the local take-off by which it might have completely revolutionised Chinese society – as brilliantly documented in Needham's with Wang et al. famous multi-volume study;

[580] *Competitive plausibility* is a term borrowed from Martin Bernal; *cf.* Manning 1990.

[581] An inspiring and lasting, example of studies along this line is John Bernal's (Martin Bernal's father) four-volume study *Science in History* (1969 / 1965), written from a vulgar Marxist perspective. But inevitably the book also brings out the limitations of such an approach, in terms of naivity and a-historical over-determining reductionism.

- the great constancy of the 'secret sciences', especially astrology, throughout a few thousand years of the history of Old World science no matter what specific socio-political or political economy context (Uhlmann 1972; Thorndike 1923-1958; Tester 1989; Pingree 1978);
- the fact that new scientific and technological developments often may be underpinned by forms of mathematics formulated centuries before with no particular application or purpose at the time except the free play of scholarly imagination (Merzbach & Boyer 2011; Struik1948; Bochner 1973);
- the fact that anthropology, once started as an obviously hegemonic complement of European expansion, quite soon in its history, by the middle of the twentieth century CE, turned into the most powerful tool to combat colonialism and imperialism by reference to a – now obsolete, but once extremely effective and liberating – cultural relativism (Herskovits & Herskovits 1973; Copans 1975; Asad 1973; van Binsbergen 1984)

– all these are examples of the fact that between knowledge production and the wider socio-political-economic context there is certainly not a one-to-one relation of overdetermination, but rather a creative interplay that tells us as much about the freedom of the human condition as about its constraints. I think that a-historical determinism is one of the main flaws of Harding's approach, although not central to her argument.

Let us continue on the point of the participation of other scientific traditions in a game of competitive plausibility involving also North Atlantic science. While this appears as no more than a theoretical possibility in Harding's argument, in fact it is, of course, a simple historical given that stands at the very cradle of North Atlantic science. Almost by definition, North Atlantic science derived its very origin from other cultural traditions than those of the European mainland. In the Ancient Near East, between Egypt and Mesopotamia, science emerged in the form of systematic knowledge that was gradually expanded on the basis of experience and research, and that was administered by established forms of organisation close to the centres of religious powers – the Mesopotamian temples and the Egyptian, likewise temple-associated,  *prwt ᶜnḫ*, 'houses of life'. It was initially partly a practical science, but especially a science orientated towards magic and divination – something which today we are privileged to call a pseudo-science, precisely because from that same domain of scientific knowledge production a more valid knowledge of nature developed, with a stricter methodological underpinning of its epistemological claims, in the light of which most earlier forms can be regarded as obsolete. However, let us not forget that from the earliest period of Antiquity on which we have documentary sources (the end of the fourth millennium BCE), right into the eighteenth century CE, magical and divinatory science constituted dominant forms of knowledge production and of publication, not only in South and East Asia and the Middle East, and not only in the largely illiterate traditions of Africa, but also in Europe. In addition to being an innovative astronomer, Kepler was an astrologer. And it is even a moot point whether the main founder of modern North Atlantic

natural science, Newton, was not also involved in astrology – he was certainly involved in alchemy, and considered not his contributions to mechanics, optics and mathematics, but his totally chimerical, pious studies of Biblical time reckoning as his life's work – enough to demonstrate that at least to a considerable extent he moved in world of thought in which the magical and divinatory sciences had retained much of what for four millennia or longer had been their time-honoured place.[582]

As a next step, Harding shows which traits of North Atlantic science have been identified by South social and cultural research of science and technology, as characteristically North Atlantic, and by implication, as less than universal. Here we are particularly concerned with traits that from a Northern perspective appear as self-evident, and which therefore would remain virtually invisible to North researchers.

(a) For instance, Harding mentions Joseph Needham's hypothesis to the effect that the European conception of invariable and universal laws of nature was based on a combination of Jewish-Christian representations of divine judgement, coupled to the absolute monarchy in Early-Modern Europe; wherever such traits would be absent, like (allegedly) in China, the idea of law of nature would not exist but instead we obtain the Taoist image of a self-regulating nature.

> *I find this a moot point, for a number of reasons. Harding's point of reference as a philosopher of science is the history of North Atlantic science in the Late Modern period, and her knowledge of other periods or regions of the world appears to be pardonably sk*etchy. *A detailed analysis of the concept of* λόγος logos, *first attested (that is, in a specialist philosophical sense) in the Presocratic philosopher Herakleitos – albeit in a potentially contaminated Byzantine source*[583] *– suggests that we cannot completely reduce the concept of law of nature to a Jewish-Christian religious representation – Herakleitos lived five centuries before the Common Era, and there is no evidence that he was in touch with emergent Judaism – by his time the* Old Testament *was just being codified. As much as two*

[582] Cohen 1941; Coudert 1980: 198. In any case Newton was preoccupied with the history of astrology, *cf.* Morus 1960: 8, also Tucker 1939; Tester 1989 / 1987.

[583] Vergeer 2000: 306 *f.*, argues the case for a Byzantine text corruption in this Herakleitos fragment 50; *cf.* Diels 1951-1952. If Vergeer is right there is only fragment 2 to attest that Herakleitos used the word *logos*, and (despite the frequent and central use of this word in classic Greek philosophers; see the very full entry in Liddell & Scott 1968 *s.v.* λόγος), there is somewhat more reason to detach the *logos* philosophy of early Christianity from the mainstream classic Greek philosophical tradition – which would be in accordance with Harding's view of things. However, via the Stoa and Philo there is an unmistakable link between the classic and the Christian usage of this term (*e.g. John* 1:1). On *logos* in Herakleitos also *cf.* Gadamer 1999: 43 *f.*, and especially 96 *f.* n. 29.

> *millennia, as well as a few thousand kilometres, separate Herakleitos from the Early Modern absolute monarchy in Europe, but similar forms of royal rule, although rather absent from city-state-centred Ancient Greece in the classical period, did inform the great states of the Ancient Near East, of which Greek communities often constituted an underprivileged cultural, social and political periphery. Absolute rulership as standard in neighbouring societies hovered as a terrifying threat over classical Greece, and motivated Greek heroism and success in the Persian Wars. Moreover in later periods of Chinese history than the emergence of Taoism (which emerged in the second half of the first millennium BCE) there was a considerable degree of political centralisation in China. In Chinese mythology, the underworld is an elaborate bureaucracy where divine judgment is is matter of course (Christie 1968). I believe Harding also misrepresents Needham, whose own erudition and access to local assistance gives far less reason for doubt than Harding's.* But, as Harding continues, while on the one hand Christian culture may have furthered the growth of natural science through the concept of law of nature, on the other hand it retarded the same process by the idea that heaven was composed of fixed and impenetrable concentric crystal orbs. *Here we detect another flaw in Harding's knowledge of the history of science: the rigid crystal image she cites is already found in Anaximenes and Aristotle,*[584] *and was simply inherited by Christianity as part of a fairly limited selection of classical scholarship available to the early Church. There is nothing in the idea of the crystal concentric orbs that is dictated by the doctrine of Christianity, and if anything, such an idea is in contradiction with the much older view, first attested in the oldest Sumerian and Babylonian sources, then adopted in the Hebrew bible and hence in Christianity, of a much more open, airy, transition between heaven and earth, allowing for the breath of the Gods to soar over the waters* (*Genesis* 1:2), *and for communication and exchanges between Heaven and Earth by means of a tower, rain, the rainbow, a ladder, etc.*

(b) Further, the growth of North Atlantic science would owe much to European expansion in the same Early Modern age. Science picked problems which related to that expansion – obviously an example of science and society reflecting each other rather than being perpendicular or unrelated, as in free variation.

> *In addition to the examples that Harding gives, one might cite here the example of the invention of the chronometer, John Harrison's successful submission (developed in the years 1729-1760) to a contest already*

[584] For Anaximenes, see the collected complete fragments in: Fairbanks 1898: 17 *f.* Aristotle: *De Caelo*, 8 and 9, numerous editions and translations (including Aristotle 2001b); an authoritative summary in: Dijksterhuis 1989 / 1950: 35 *f.*

> *launched by the British government in 1714 for a prize of £20.000, to determine the longitude of ship within 30 nautical miles, after a voyage of six weeks (Gould & Anonymous 1961).*

But the situation did not change dramatically in the course of centuries:

> 'We can generalize the point. the world was added as a laboratory to modern science in Europe through European expansion, and continues to so function today through the science and technology components of "development" that are controlled by the cultures of the North'. (Harding 1997: 54)

(c) An important goal of science was to facilitate European appropriation of the rest of the world, not to reduce the local costs of such appropriation in non-European areas, nor to improve local conditions in non-European areas regardless of the interests invested in the European presence. The benefits of science accrue to those who are already privileged (the inhabitants of the North Atlantic region, and the South elites in collusion with the latter). With the aid of science these elites can realise their extraction and exploitation of natural resources in the South, whereas the costs are carried by others (notably locals, and forcibly migrated slaves). In general this cost / benefit distribution remains invisible because it is dismissed as scientifically irrelevant.

(d) The claim that science could be value-free and culturally neutral is in itself already unmistakable North Atlantic, and betrays – along with the emphasis on the abstract and the formal – a bureaucratic rationality (*cf.* Weber 1969) that is is likewise particularly North Atlantic. For this reason the introduction of modern science into another culture is always a brutal penetration. Such objectivity and universality as are claimed by North Atlantic science, has tended to privilege North Atlantic experts above local knowledge and local priorities.

Finally Harding discusses two crucial problems:

- how may local characteristics of a science (*i.e.* characteristics which do not just inform its superficial appearances but its very cognitive core) function as growth points of knowledge?, and
- how to respond to the South need for a more powerful internal epistemological underpinning of science?

Whereas her concept of culture was already obsolescent (she entirely follows the classic convention of defining culture as a bounded form of life, which is learned, designated by an ethnic name, internally integrated, and within whose unitary conceptual space a total human life from cradle to the grave can be realised),[585] in her discussion of point (a) above her concept of culture totally

[585] The critique of such an approach to culture has been one of the central themes in anthropology and cultural studies over the last few decades. *For glimpses of this debate, and some*

shipwrecks – it merges into a plainly genetic one of 'local reproductive population' (whereas of all things the distinction between learned and genetically innate is central in almost any accepted definition of culture):

> 'Cultures [*sic*] develop biological traits to deal with their environments: lungs to accommodate high-altitude conditions, inherited resistances to malaria, dark or light skins to deal with the effects of differing exposures to the sun, *etc.*' (Harding 1977: 56 *f.*)

It is amazing to see that someone who shows herself to be so subtly sensitive to world-wide patterns of inequality and power in the production of knowledge, yet (*pace* Harding 1992) can be so insensitive to concepts as culture and race which yet have become the central political concepts of our time, and central pretexts for the justification of excessive mass violent and genocide. Nonetheless, this false start yet proves to lead Harding to an interesting insight. For if we accept that any society, in order to survive (other than parasitically), must supply its members with valid knowledge about nature, then we are justified to pose, with Harding, that:

> 'These "cultural differences" create possibilities for different cultures all to contribute to the expansion of knowledge about the natural world. The claim is here not that belief based on some set of local interactions is always more accurate; very often it is not. (...) Rather the claim is that cultures' different locations in heterogeneous nature expose them to different regularities of nature, and that exposure to such local environments is a valuable resource for advancing collective human knowledge. Cultures are repositories for historically developed and continually refined knowledge about different parts of nature.' (Harding 1997: 57)

Subsequently, every 'culture' (I prefer to speak of cultural orientation, to avoid the reification attached to the classic concept of culture) makes a different use of its local experience of nature, and this leads to distinct forms of knowledge. Therefore, every cultural orientation approaches nature with a different discursive tradition, which entails a different representation of nature, and which makes a different science possible. And within each cultural orientation, people involved organise themselves in a specific manner for work, including the work of the production of scientific knowledge. These points define a wide range of variation, which, coupled to the continuous dynamics of change within nature itself, turns the myriad local situations into myriad inexhaustible sources for human knowledge.

Elsewhere in her argument Harding speaks of the devastation and the plunder which was perpetrated in the name of science during the period of European expansion. But not all changes which humans have effected upon nature can be brought under this heading. Arrived at the point of the endless variability of the local experience of nature and of the local cultural interaction with nature, Harding overlooks the interesting possibility that local nature r e s p o n d s to a specific local cultural orientation. For example: specific flora and fauna may have

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literature, cf. van Binsbergen 1999 / 2002 / 2003, as well as for an alternative in terms of the concept of 'cultural orientation'. Also *cf.* note 533, above.

emerged, or rather may have been selectively privileged for survival (cf. Darwin 1859), in response to centuries of exposure to specific methods in agriculture, animal husbandry, habitation etc. In addition to such social and cultural factors, of course also political and economic ones must be considered.

13.4. An epistemological underpinning, after all?

Now it is time for us to see whether we can reinforce the epistemological underpinning of North-Atlantic / global science from an intercultural perspective. Harding begins this part of her argument with a most interesting claim:

> 'Southern SCSST's ['Social and Cultural Studies of Science and Technology'] relocation of science and technology studies on to the historical maps generated by the post-colonial, single-stream global histories is clearly intended to provide not just another, culturally local account on an epistemological par with Eurocentric, single-stream histories of science and technology, but, instead, an account that is more objective and rational. However, to claim such an epistemological status does not require denial of the fact that Southern SCSST are constituted by their local cultures and practices. Instead, such a claim recognizes that at some moments in history and culture, certain locally generated cultures and practices can provide knowledge of interest far beyond the locations where it was generated. It is not just that such "local knowledge" travels well and far, but that it travels in a determinate historical relationship to other knowledge claims: it overtly contests them, claiming that they lack maximal accuracy and comprehensiveness. It claims greater objectivity, in that it can identify distorting or limiting features of the claim it contests.' (Harding 1997: 59)

This claim is interesting for a number of reasons.

Not in the last place because it seems to contain the promise that North Atlantic science's claims to superiority may, after all, turn out to be justified. If such science studies as have been undertaken from the South may turn out to be the superior products of a privileged situation in space and time, then it is in principle thinkable that also North Atlantic science, for comparable reasons of a privileged situation in space and time, might also turn out to be such a superior product. I am not just being hypercritical or sarcastic. Harding definitely turns this promise into a firm claim before the end of her argument, affirming the superiority of North Atlantic science as if we never embarked on our argument's quest in the first place!

At least as important is that from a specific point of view, self-evidences appear in a new, revealing light, which is how the growth of knowledge is realised. But as soon as we ask ourselves what is the specific point of view which appears to be illuminating to Harding, we once again find her argument thwarted by an inadequate concept of culture. Here the point is not that she confuses culture with demography or population genetics; but she confuses culture and

> 'a geographical provenance that is marked as non-North Atlantic'

– with a myopia that may in part be caused by the common, non-specialist – *i.e.*

non-anthropological – American language use of today, *cf.* the expression 'ethnic food' for any culinary pattern that is not White Anglo-Saxon Protestant, as if the latter – s*imply by virtue of being socio-politically dominant* – were not, too, inherently 'ethnic'. The South science studies to which Harding refers[586] have been largely undertaken by researchers working in or originating from the South Asian subcontinent. They have produced excellent studies, based on a sophisticated methodology, written in superior English and often published by international, or rather intercontinental, publishing houses. Let us admit, nonetheless, that the authors occupy a structurally different place in the intercontinental production of science from, say, their colleagues who were born and bred in the North Atlantic region. Yet many of these South researchers may hold appointments, or have done so, at prominent academic institutions in the North Atlantic region. *What is it that marks these studies as local, and as specific products of a distinct culture that rejects the products of North Atlantic culture?* On the contrary, such studies are brought to fruition, in book form, by the felicitous combination of two conditions none of which can be convincingly identified as the manifestation of a distinct local culture:

1. the critical reflection upon a past in which third persons with whom the author identifies, were exposed to colonial oppression, exclusion and other forms of humiliation;[587]
2. the effective acquisition of a globally circulating academic subculture.

What Harding calls 'local culture' and treats as a source of superior (for more rational and more objective) scientific insight, is in fact (as science is so often) not a reflection of local society in South Asia, but perpendicular to the latter, amounting instead to a variety of a critical *prise de conscience* within the globalised pursuit of science (*i.e.* (2)), underpinned by a personal identity construction as under (1). Such authors' distancing from the North Atlantic hegemonic discourse springs not so

[586] *Cf.* Goonatilake 1984; Kumar 1991; Nandy 1990; Sardar 1988. These studies complement a body of equally critical studies emanating from the North Atlantic, *e.g.*: Blaut 1993; Brockway 1979; Crosby 1987; Dupré 1993; Hess 1995; Joseph 1991; McClellan 1992; Needham 1969; Petitjean *et al.* 1992; Turnbull 1993; Watson-Verran & Turnbull 1995.

[587] Here the emphasis is on studies of the School of Post-colonial Theory, which has been dominant in South Asia for a few decades. On a world-wide scale, Islam today furnishes a framework where the source of critical protest is not only colonial oppression in the past (*cf.* the Palestinian question) but also and particularly North Atlantic rejection of alternative forms of social, cultural, political and religious practices and representation today, especially in so far as these revolve on alternative trajectories through modernity and globalisation. The orientalism discussion initiated by Edward Said was a reflection of this process in the context of North-South, and South, science studies. In my pieces on '9 / 11' and on Derrida's approach to religion (Chapters 5 and 6 of the present book) I take other glimpses of this complex interaction between Islam and the North Atlantic – but no more than glimpses, and inevitably severely dated in the light of the violent global conflicts of our times. In the limited scope of this book I cannot do justice to the profound contradictions involved, even though these are of vital historical importance. Let it suffice to refer to the 'postscript' by which I now let precede Chapter 5.

much from a South Asian cultural orientation which all these authors may have in common, but from the coupling of (a) a personal identification, to (b) universalist values of equality, justice, dignity, liberating potential, and the societal mission of society. Some of these may resonate with traditional South Asian cultural orientations but by no means all: not equality but inequality has been the basic orientation of South Asian society for three millennia (Dumont 1966; van der Veen 1972). By and large however these authors' views concerning South science must be considered elaborations of global intellectual elite subculture, which has strong roots in the North Atlantic. *Thus local culture and local knowledge which Harding, for reasons of political correctness, invokes as a source of superior knowledge, appears to be an anti-hegemonic myth (albeit a highly sympathetic one, let there be no doubt about that).* The local element to which she calls attention amounts to a strategically chosen position of critical distance (or rather, of *selective* critical distance) within the North Atlantic regime of subjugation through knowledge production – it is a critical alternative which does not need to be derived from South Asian traditional culture (where I suspect it can hardly be found), because it is abundantly available within the North Atlantic social and historical sciences, with their partly Marxist and social-critical roots. Although being an Indian intellectual in the modern world system does help, one does not have to be an Indian to come to such a critical position: being young, being a woman, being homosexual, coming from a working-class background (like in my case), any of these backgrounds may lead one to the same critical position, and even a highly privileged background does not preclude such a positioning, as it well illustrated by the revolutionary sons of the upper class, such as Willem Wertheim and Martin Bernal.

In addition to local South culture, also the female perspective features rightly as an illuminating alternative in Harding's argument, throwing into relief 'conceptual power practices' (Smith 1990) much more clearly. While Harding's approach to South culture remains abstract and 'politically correct' to the point of distortion, as we have seen, with regard to the feminist perspective she speaks from the personal experience of many years, and with much great power of conviction.

After, in the above manner, *objectivity* and *rationality* are beginning to take on a new meaning regardless of the traditional internal epistemological claims, Harding finally investigates whether there are reasons to continue making the third claim with regard to North Atlantic science: the claim of *universality*. Her formulation of the problem is so striking that it almost appears as the very solution to the problem:

> 'In contrast to the case with only local knowledge systems, people from other cultures who do not share each other's values and interests can nevertheless understand and use such real sciences, and whether or not they understand and use them, the universally operative natural forces that shape their lives can be predicted and explained by the laws of nature that real sciences articulate. In such accounts, terms such as "universal science", "universally valid claims", and "universally operative forces" call up a number of different meanings originating, evidently, in everyday uses of the term, as any dictionary reveals.' (Harding 1997: 61)

In the first place, she rejects the idea that only value-free science can be univer-

sally valid. For are not all claims to scientific and technological knowledge *local*, in the sense that they spring from the cultural practice of specific knowledge projects? Value commitment, she claims, is a positive factor in the growth of knowledge. But if the solution does not lie in value-free-ness, could the universal validity of science then mean that its authors hail from many different cultures and adhere to many different specific belief systems? Harding acknowledges that in fact all involved must endorse a scientific subculture, which is in principle perpendicular to their various cultural identities outside science:

> 'So why could they not all also agree to scientific claims permeated by Confucian, Brazilian, or African "cultures and practices"?' (Harding 1997: 61)

Harding finds this a non-trivial and promising point of view, because it opens up the possibility that scientists could agree on scientific claims that are not rooted in North Atlantic culture and practice. She reminds us of the fact that Indian mathematical concepts, Arabic numbers[588] and Chinese acupuncture have been incorporated in global science – examples of an important theme in South science studies.

> *But here again rises a moot point. The incorporation of Chinese acupuncture in global science appears to have been merely at the level of condoning practices and possibly making them eligible for insurance refunds. Acupuncture remains rather a* black box *– like a cellphone or a motorcar one can use / apply it without knowing, let alone subscribing to, the theory of its inner workings. The extensive revision of cosmopolitan science so as to incorporate the acupunctural meridians and nodes as a paradigmatically underpinned factual reality largely remains to be undertaken.*

And here again it appears that Harding's conception of the history of science and of cultural specificity is much too static.

In the first place, 'Cultures Do Not Exist' (van Binsbergen 1999a, 2003b), – the appeal to distinct *cultures* is an artefact of the modern socio-political situation which privileges fragmented cultural identity as a major asset within the parcelled-up arena of the *politics of recognition*.

Secondly, beyond the reification of culture, let us admit that there is some truth the notion of the specificity of a considerable number of parallel cultural orientations, none of which however sufficiently distinct and comprehensive to allow

[588] Which incidentally came from India, *cf.*: Alberuni 1888 / 1030; Ifrah 1991 / 1981 / 1994; Coedes 1931; Woepcke 1863. Harding's keen appreciation of the intercultural and intercontinental dynamics of science production is based on her reading of modern South sciences studies as produced in a Post-colonial Theory frame, much more than on her reading in the history of South science in its own right. Against this background, she does not seem to be aware of the provenance of the so-called Arabic numbers, although she uses the example of their European appropriation once more (Harding 1997: 62).

an adherent to live one's entire life in its from the cradle to the grave; but then the scientific cultural orientation, or any number of such scientific cultural orientations, does not necessarily coincide with other cultural orientations outside science, but only partially overlaps with it or is perpendicular to it. A scientific cultural orientation (which may be a locus for human production but scarcely for reproduction – it may produce test-tube babies but does not raise them into adult members of society, let alone into scientists) is often a isolated, imported body that, rather than spring from a local cultural orientation, needs to be specifically adapted, through a process of transformative localisation, in order to be accommodated.

And thirdly, the history of science is not only, and not in the first place, a process of the present-day convergence (real, potential, or thwarted) of initially independent and irreducible distinct cultural positions. The distinctness in itself is largely the product of two factors w*orking upon an initially more unitary input:*

1. *transformative localisation* as may be illustrated with the transcontinental continuities visible in the case – already discussed several times in this book – of geomantic divination (see above, Fig. 1.1.) It is transformative localisation which helped turn Babylonian and Egyptian science into Greek science, Greek science into Indian science, Chinese *I Ching* into the medieval Arabic divination system of *'ilm ar-raml* / *ḫaṭṭ ar-raml* into such African divination systems as Ifa (West Africa), *Sikidy* (Madagascar), and *Hakata* (Zimbabwe, Botswana South Africa), as well as in the European Renaissance magic known as *geomancy*; and subsequently
2. *the geopolitical ideology of European expansion*, which (after the Early-Expansionist invention of the interrelatedness of Indo-European languages) could hardly afford to see identity between the cultural history of the colonisers and the colonised, and therefore had to invent difference where in fact there was largely the sharing of a joint history for millennia.

And fourthly, a problem that Harding does not seem to perceive at all: *given the hermeneutical impossibility of representation without violence, it is so very difficult to represent non-North Atlantic knowledge systems in such a way that the the internal richness and complexity of the knowledge system can still be more or less appreciated, and that the rendition is not severely mutilated by the imposition of an alien, North Atlantic model (as happens in many present-day, highly politicised studies of so-called indigenous knowledge systems, where local knowledge appears in commoditified and juridified form as if they were initially conceived along North Atlantic lines in the first place)*. Especially the introduction of African knowledge within the global, North Atlantic dominated edifice of knowledge is difficult and still largely in its infancy, for a number of reasons:

- Many African knowledge situations are illiterate
- In many African situations knowledge features as personal property
- Many African knowledge situations are characterised by practices of secrecy

- Many African knowledge situations have religious and occult connotations, which are very difficult to transfer to a North Atlantic science emphatically identifying as secular and rationalistic
- There is the point, also articulated by Harding, of the paralysing effect of North Atlantic science, which on the side of local African knowledge systems brings about such distress that exchange on an equal footing is virtually impossible
- And finally, the discourse on African scientific systems is still insufficiently developed, it is still in danger of being too apologetic, even condescending, or worse still, racialist.[589]

Another reason for the universality claim is that many people from many different cultural orientations and geographical locations wish to borrow elements from North Atlantic science for local use far from the point of origin of these elements. Of course this is nothing new. In the same way Babylonian astronomy, the Phoenician alphabet, Arabic numbers or Chinese acupuncture have been appropriated, apparently without it being necessary to adopt the wider cultural imbedding which these forms of knowledge had at their origin. *A crucial point in global cultural history is that formal systems may cross cultural boundaries, while shedding the original cultural and symbolic wrapping of their origin*. With modern globalisation the frequency of such appropriation has greatly increased, but the fact in itself is of all ages. Here again we meet the tension between the empirically valid and the societally valid: if these and other knowledge systems which have been effectively and widely appropriated far outside their origin, were completely and irrevocably defined by their original societal setting so as to remain totally dependent upon the active connection with that original setting, such appropriation would have been impossible unless under conditions of the wholesale adoption of the original culture – which seldom is the case. The relative, 'perpendicular', independence of knowledge from society constitutes a major factor towards the possibility of such appropriation. (Of course, in the case of conventional formal systems such as an alphabet, valid knowledge is scarcely[590] at

[589] Racialist claims of Africans' alleged incapabilities for science abound in the literature produced in the North Atlantic region between 1850-1950. A classic study of an African knowledge system remains: Evans-Pritchard 1972 / 1937. The conception of magic as misfired science, often implied in the North Atlantic analysis of African knowledge systems, derives from: Frazer 1890-1915 / 1911-1915, and many later editions and excerpts. Detached, sensible approaches to African science in: Horton 1967, 1993. Complementary to this sustained argument is: Winch 1964 / 1970. The discussion, which still has not subsided, is reflected in an illuminating manner by the prominent African philosopher Sogolo (1998). Without explicitly resorting to the Afrocentrist discourse, the claim that original and systematic knowledge about nature is at home in Africa was developed by another prominent African philosopher, Hountondji (1994). Afrocentrist sentiments and modes of analysis (occasionally bordering on essentialism, even racism – but that is not the point here) prevail in: Finch 1990; Lumpkin 1984; Pappademos 1984; van Sertima 1983. Such approaches have come under heavy fire, *e.g.* Palter 1996; Howe 1999 / 1998. In the present book I overlook, and repeat, my many attempts, over the years, to defend Afrocentrism from such evidently ideological and hegemonic attacks.

[590] To the extent to which the letters are semantically empty carriers of phonological elements by which words are formed in a language; however, before that ideal, abstract situation was reached, Egyptian, Phoenician and Hebrew letters were imbued with implied magical meaning,

stake, only relative cultural independence; valid knowledge is however at stake when it come to such borrowings as astronomy.) *So, part of the explanation of the universality claim of North Atlantic science lies in the possibility of it containing valid knowledge about nature*. If it does, such science will demonstrably hold true far outside its origin: the aeroplane will not crash. Harding admits that in the same way also science from outside the North Atlantic may work: Chinese acupuncture, Ptolemaeic astronomy (which she might have recognised as mainly a Hellenistic reformulation of Babylonian astronomy), and Aristotelian physics (which she might have designated, more precisely, as Archimedean physics), also turned out to explain much and to predict much, even though the later explanations by Copernicus and Newton turned out to be superior. In other words, and once more: *the North Atlantic region does not have the monopoly to valid knowledge about nature*.

This is the point where Harding arrives at her formulations in terms of some sort of scientific biodiversity of knowledge systems, triggered by the different local natural surroundings.

However, Harding does not so easily revert to the position that, regardless of societal hegemony, the universality claim may be simply based on the sheer validity of scientific knowledge. Before she gets there she first draws attention to alternative explanations on this point, as advanced by such science researchers as Latour.[591] They sought to answer this question by pointing at the wide networks of communication through which heterogeneous and isolated forms of knowledge could be mobilised at all sorts of places and times. In fact, the history of the 'secret sciences' all across the Old World is one example of such a large and enduring network. The argument is persuasive up to a point. It makes the claim to universal knowledge appear, not as an intrinsic characteristic of that knowledge, but as a social product of interaction and of communication technology. What is important here is the idea that it is the privileged recognition as valid knowledge, which is thus attained as the result of a social process. But *recognition* of validity is not the same as validity. That validity and its universality then yet leads us back to the epistemological condition which Harding, at this point in her argument, pushes under the table. It is the internal epistemology of North Atlantic science (in principle also applicable to non-North Atlantic science) which is thus smuggled back in.

This finally brings Harding to the identification of four processes which in a unique way have privileged North Atlantic science to attain universality. European expansion, she claims, offered the opportunity to

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which to some extent continued to cling onto them for a millennium or more, hence *e.g.* the use of runes (distant derivates from the Phoenician alphabeth) for magic in Northern and Western Europe, the usage of gematria in medieval Judaism, *etc.*

[591] *Cf.* Callon & Latour 1981; Latour 1987, 1988, 1993; Latour & Woolgar 1979; Serres & Latour 1995.

1. test out European scientific insights all over the world as if in one big laboratory
2. scrutinise the entire world for fragments of local knowledge that could be integrated within European science
3. destroy local knowledge systems and technologies in favour of European alternatives, and most importantly
4. impose the predatory conceptual framework of European science, which through a constant process of substitution of the abstract for the local and concrete, replaces local knowledge (for instance a culture-specific vision of local nature) by European knowledge (*e.g.* in terms of scientific taxonomy and ecology; thus local totemic animals become *Marsupialia*).

In this way the illusion could be established that only North Atlantic scientific knowledge, and only North Atlantic scientific knowledge, is real, valid knowledge.

Harding is rather optimistic about the potential of South science studies to counter these developments. However, once more she overlooks the fact that most South science researchers, because of their commitment to intercontinental academic life, are at least in their professional identity fairly alienated from any local South culture. More important, she does not in the least indicate what the possible strategies could be to,

- identify valid scientific knowledge in other cultures (here there is the problem of subordination: how could such an identification take place in any other way than by using North Atlantic science as a touchstone?)
- to bring such valid knowledge within the orbit of globally available and accepted knowledge.

Finally she makes too much of the binary opposition between the local and the global. In fact this is a pitfall. All knowledge is always local in the sense that it is acquired and administered by a concrete set of people, but because of the very possibility of the mediation of knowledge beyond that initial set of people (a possibility given by the existence of language, cultural orientation, interaction, and the globular shape of the earth), any knowledge has in principle the potential of spreading to a global format. And that has happened with much local knowledge, in a general process that in the last hundred years or so has been intensified by the spread of education, literacy, and the Internet.

Elsewhere (van Binsbergen 2003b: ch. 13) I have tried to approach the same problem of the opposition between the local and the global in terms of the question whether modern communication and information technology (ICT) is or is not, at home in Africa. The answer turned out to be surprising. On the one hand I had to admit that also in North Atlantic society ICT is *not self-evidently at home*: it first had to be enculturated even there, even though in many ways ICT bears the traces of having been mainly conceived and implemented by

members of North Atlantic society. On the other hand, the appropriation and enculturation of exotic technology and prestige goods which at the same time symbolise and effectively underpin local power, has a history of millennia among the political and social elites of Africa. ICT, as a new prestige good, fits this framework very well indeed. And finally it turned out that Africans have been remarkably successful in the appropriation of ICT, a process in which they have exploited not only global factors (such as the fact that industry needs customers no matters where, and the fact that ICT can be used as a black box without the user being required to have more than nominal knowledge about its internal working), but also local African factors such as the long history of African formal systems (*e.g.* mankala and geomancy), and a much greater emphasis, in African social relations, on rhizomatic (network-like) structures and processes, which although rather at variance with the dominant forms of social organisation in the North Atlantic, yet have a considerable formal similarity with hypertext and hyperlinks in ICT. Thus it appears that between the local and the global there is not the insurmountable, lapidary difference as suggested by the binary opposition, but the latter is largely, Derridean fashion, resolved in a tension relation, where both poles need to be simultaneously appreciated in the analysis.

At the end of the exciting quest on which Harding has taken us, we are beginning to realise that cultural specificity and ethnic appropriation may all amount to ideological rhetoric. In the last analysis all knowledge has always both a local and a global aspect in the sense that it is in principle an achievement of humankind as a whole, and in principle globally communicable as such. This involves more than the epistemologically underpinning of procedures along which that knowledge can be valid or true knowledge. Truth plays scarcely a role in Harding's argument. Yet even she cannot escape the idea that much of North Atlantic knowledge is, after all, for the time being *true*in the sense of constituting valid knowledge, which may be effectively applied far outside the North Atlantic region, and not only for reasons of social and political hegemony – and that in fact the same applies to much knowledge produced outside the North Atlantic region. However, the recognition of such validity is a social process, in which global power relations privilege one type of knowledge, and one format of knowledge, far above all others. Only once we have become conscious of these socio-political contingencies, can we realise that the acquisition of such true validity depends, in the first place, on the internal epistemology of any local knowledge system, be it North Atlantic or from other parts of the globe.

13.5. Conclusion

All this leads to the realisation that there is something in the contents, the format, the reproducibility, the validity of certain forms of knowledge by which the latter detaches itself from the social contexts in which it was first produced and

administered, and is no longer fully dependent upon those contexts – although the original state of affairs may continue to shimmer through. In my forthcoming book *Sangoma Science* I will propose such oscillatory emergence to be at the heart of all reality, including human life and its achievements. North Atlantic science is often surrounded by the pretension of such an abstract, universal applicability. However, the depressing results of much international development cooperation demonstrate that it is only under specific additional conditions (relating to physical environment, social context, infrastructure, attitude to work, discipline *etc.*) that North Atlantic scientific insights can be affectively applied globally. On the other hand we have experienced, over the past few decades, an increased availability and circulation of non-North-Atlantic forms of knowledge: through the popularisation of alternative modes of medicine often from an origin outside the North Atlantic, and by the circulation of non-North Atlantic knowledge systems (including methods of divination) in a *New Age* context, via workshops, books, and especially through the Internet. It is important to investigate to what extent these do contain valid knowledge about nature, and to what extend such valid knowledge may have survived the transformation of such knowledge systems to a globally recognisable and transmittable format. Elsewhere (van Binsbergen 2003b: Ch. 7) I have done precisely this for the *sangoma* science of Southern Africa, and the results are encouraging.

This is where we have to stop, by indicating exciting routes for future exploration. Meanwhile we have made considerable advances. We have gathered some additional insights in the socio-cultural, political and historical factors under which North Atlantic science has been able to claim universality, rationality and objectivity, largely for valid reasons, but still at the expense of other knowledge systems' claim to equally valid knowledge about nature. We have largely rid ourselves from the guilt feeling according to which it could only have been hegemonic or racialist reasons that made us attribute a high validity to North Atlantic science, of all knowledge systems. We have recognised that valid knowledge about nature must also be abundantly available in non-North-Atlantic knowledge systems. We have begun to suspect that non-North Atlantic knowledge system may even have access to forms of valid knowledge to which North Atlantic science has no access for the time being, either because of the admission, in non-Atlantic knowledge systems, of other sources of knowledge than those recognised in North Atlantic science, or because of a knowledge situation in which partly different natural phenomena and different socio-cultural organisational forms of the knowers are involved. Much further research is required on all these points, yet we have made a significant step towards both the critiquing, and the vindication, of global science.

Chapter 14

Time, space and history in African divination and board-games

This Chapter was originally written in 1995, from what was clearly a social-science perspective, as an invited contribution to a valedictory conference and a Festschrift *on the occasion of Heinz Kimmerle's retirement from the Chair of Foundations of Intercultural Philosophy, Philosophical Faculty, Erasmus University Rotterdam. Kimmerle had initiated that new chair upon his retirement (1990) from the institutionally more central Rotterdam chair of continental philosophy, which he had deservedly occupied after spending decades on research in the Hegel archive in Germany. Given the substantial disciplinary, social, and geographic distance between Leiden African Studies and Rotterdam philosophical anthropology, my links with Kimmerle and his department were loose and superficial at the time. Kimmerle had taken the initiative to these contacts since as an intercultural philosopher his main focus was no longer in the first place on Hegel, but was to be redirected to sub-Saharan Africa. Despite the initial distance, my participation in these valedictory functions initiated a chain of events which resulted in my emergence, two years later, as Kimmerle's successor – the surprising outcome of an internal struggle within the Rotterdam Philosophical Faculty. My accession went not without considerable opposition and protest, but that was years after we fittingly celebrated Kimmerle's long and fruitful career.*

14.1. Introduction

14.1.1. Heinz Kimmerle in Africa

Heinz Kimmerle's fascination with Africa has been a move, not so much away from main-stream Western philosophy (to whose Hegelian overtones he has been particularly tuned, with a mounting critical attitude), but towards modes of thought which might help to relativise and fertilise the Western tradition, in preparation for the global philosophy the world shall need for the third millennium CE. In the process, he is likely to have developed an interest in the im-

plicit forms of philosophising as contained in African literary productions, proverbs (*cf.* Kimmerle 1997), rituals including divination, and games.

It is significant that his collection *Philosophie in Afrika / Afrikanische Philosophie* (Kimmerle, 1991) contains a poetic section in which Abimbola (1991; *cf.* 1975) rephrases the highly standardised interpretational catalogue of the Nigerian Ifa oracle. Incidentally, one of Kimmerle's last PhD students comes from a family of diviners and seeks to render this background in his academic writing.[592] Much more than in the North Atlantic world today, divination has remained part and parcel of the African everyday experience (Devisch 1985d), and as such it constitutes an important perspective upon African processes of thought. There is no African society that does not have a variety of divination systems, and while many of these are highly confined in space and time, others have crossed cultural and linguistic boundaries and are found, in thinly disguised form, all over the continent. Thus Ifa is the most famous West African variant of a dominant and amazingly wide-spread family of geomantic divination systems which, first attested (under the name of علم الرمل *ʿilm ar-raml)* in the Arabian high culture around 1000 CE, has spread over West Africa (and from there to the Caribbean and the Southern USA), East and Southern Africa and the Indian Ocean, Iran, India, and Medieval and Renaissance Europe. The structure of all these variants is identical: by simple manual chance operations,[593] and involving signs which can take two values ('yes / no'; 'one / two'; 'black / white'), a specific value out of a total range of 2^n values is generated (typical values for n are 4, 6 or 8), as a specific entry in a astrologically-inspired (but locally divergent) interpretational catalogue of 2^n such entries.[594]

Very likely, in his visits to Africa Kimmerle has also come in contact with another formal practice ingrained in African daily life: the *mankala* board-game consisting of 2 or 4 (occasionally 3) rows of holes (typically between 5 and 20 per row) along which identical tokens (usually seeds) travel according to elaborate rules conducive to complex strategies. The game has been considered to be typical of sub-Saharan Africa (*cf.* Culin 1896; Kassibo 1992), not only because of its ubiquity there in a great number of variants, but also because, of the five main types of board-games commonly distinguished (Murray 1952), it is the only type to occur in Africa before colonial times.

Certain scholars have passionately claimed a predominantly or exclusively African origin for geomancy and mankala, but that is not the point here.[595] It is my

[592] Uyanne 1994; upon Kimmerle's retirement, Uyanne's supervision was taken over by me, but before completing his thesis he returned to Nigeria to take over his father's meat business.

[593] Originally in sand, on the ground or with the use of a rimmed board, hence the generic name of *geomancy*, *i.e.* 'divination by the earth', and *ʿilm ar-raml*, *i.e.* 'sand science'.

[594] *Cf.* van Binsbergen, 1994a, 1995c, 1996c, 1996a, 1997c / 2011e, 2012d, references cited there.

[595] Personally, I contest such an African origin, holding that they have a West African origin,

intention in this Chapter to show how these two long-standing features of African life, viewed as encoded forms of philosophising about time and space, help us to pinpoint the likely socio-cultural and historical context in which such philosophising came within Man's reach – thus hinting at the possible historical dynamics of categories which, ever since Kant, European thought has recognised as fundamental but as *a priori* given, without being particularly concerned with the conditions of their historical genesis.[596] A concise theory of ritual is included as a give-away point for the attentive reader. But let us first define the main operational concepts of the argument.

Fig. 14.1. Two courtiers of the Nkoya royal court of Mwene Mutondo, resting after work, while a minimalist four-row mankala board is within reach, Shikombwe, Kaoma District, 1977.

14.1.2. Board-games

Of board-games, as a category of formalised human activity, one of the classic

and that they spread into sub-Saharan Africa in the Bronze Age, on the wings of Pelasgian expansion into that part of the world.

[596] Notable exceptions include Onians 1951 and Snell 1955; an inspiring exploration from a psychology perspective is Vroon 1992, *cf.* below, note 601. Cassirer's chapter 'The human world of space and time' is programmatic rather than historical 1977: 42 *f.*. Of course, built into sociology and anthropology, ever since Durkheim 1912, has been the idea of the social origin of the experience and perception of time and space: *cf.* Fabian 1983; Goody 1968; Leach 1972. The Proustian chapter title 'Le temps retrouvé' in Lévi-Strauss 1962, ch. viii, *cf.* Proust 1913-1927, to which my colleague Rijk van Dijk called my attention, deals not so much with the experience of time (as among agriculturalists) but with its mythical abolition (as among hunter / gatherers).