Introduction.

Plants in Medical Practice and Common Sense: On the Interface of Ethnobotany and Medical Anthropology

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There is a dearth of scholarship on the interface of ethnobotany and medical anthropology, which is surprising considering that plants are frequently used in 'traditional' medicines and ritual treatments. Roy Ellen (2006: S10) comments: 'Medical anthropology has seemed hitherto to lack in full engagement with phytomedical reality, and the acceptance that the health care practices of most people on this planet depend on plants and animals. At the same time, many accounts of folk medicinal uses still lack serious consideration of local ethnographic context. Here, it seems to us, is an enormous opportunity and challenge for research.'

This volume takes up the challenge,[1] not least by formulating questions that may encourage future research at the interface between medical anthropology and medicinal ethnobotany. To be sure, there is a vast literature on medicinal plants that provides long lists of local names, equated to Linnaean species names, and their usage; often given in a colloquial language (rather than in specialist local or biomedical terminology). Despite the value that these books undoubtedly have for a first approximation, they are not very interesting to the botanist nor to the anthropologist, and they can even be misleading. Many present knowledge out of context (e.g., divorced from details on technical preparation, the social context of application, and the means by which they were collected) and some lack rigour of inquiry (e.g., repeating hearsay information, often unacknowledged, from multiple sources).

This volume is about plants in medical practice. It emphasizes that knowledge about plants is not merely decontextualized paradigmatic

knowledge. Rather, knowledge about plants is generated in dynamic social fields and is often highly situational, as it constitutes an intrinsic aspect of social relationships and their negotiation. The research presented in this book explores when, under which circumstances, and within which social relationships plants are collected, prepared, exchanged and consumed, tested and cherished, evaluated and remembered. In doing things with plants people give them cultural form. Given this thematic focus on practice, botanical species identification according to the 'Linnaean grid', which structures so much of ethnobiology (Ellen 2006: S4), sometimes plays a secondary role in this volume. For example, in some situations the locally perceived ethnobotanical 'life form' (of being an herb rather than a tree) may matter more than the modern scientific name of the species.

The contributors to the volume work within a wide range of fields: medical anthropology, ethnobotany, history of botany, and clinical medicine. The themes they discuss cover a similarly wide spectrum, as do the angles whence they discuss them. Even if their convictions about the significance of plants in medicine may differ, they do share certain concerns. Their articles have all been written with the ordinary person in mind, who, through interaction with plants, intends to remain healthy and awake, enhance personal growth or recover from a sickness episode. This person may be an aged pensioner in the U.K. who suffers from memory loss and cannot afford overpriced CAM (complementary and alternative medicines) products, a stressed employee who needs a cup of coffee to wake up in the morning, a Kenyan Luo girl who gets a less than daily wash, or a patient in ancient China or in early modern England who is feverish, delirious or anaemic and requests medical treatment. Contributions generally focus on practices that are taken for granted, regardless of whether the article provides a portrait of a plant, the biology of specific plants, an ethnographic description of their application or a history of plant exchanges. The contributors explore practices of using plants for maintaining health, enhancing growth, stimulating the brain, and treating sickness; some deal with the way in which bodies affected by them have been sensitized to feel in culturally specific ways; others are interested in how these practices could be improved. All discuss practices involving plants.

The volume explores the interface of biological and cultural, physiological and psychological, material and social worlds. It emphasizes the social aspects of how plants are applied in medical practice without, however, explaining them in terms of bioculturalist arguments that ultimately account for social action in a Darwinian framework (by attending to questions of 'adaptation' and 'survival of the fittest'). The authors are certainly acutely aware of the groundbreaking bioculturalist research on human-environment interactions, among which the work of Nina Etkin and colleagues (Etkin and Ross 1991, Etkin 1996, Etkin 2006) particularly stands out, for the nuance with which it researches what the Hausa in Nigeria do to prevent and treat sickness with plants. Rather, the contributions to this volume are often more social constructivist in orientation, in that they highlight how plants and their parts become cultural artefacts pregnant with situational and social significance as they are applied in medical practice. Nevertheless, although all contributors emphasize the cultural specificities of the practices involving plants, none of them endorse the strong cultural constructivist programme. All consider the bodily processes that plant use triggers as being 'real'[2], and not merely the result of self-deception achieved through technologies of persuasion, metaphor and meaning. They all engage with the materiality of plants, even if for some the materiality of the plant is not primarily assessed in terms of chemistry, but is best described in terms of its phenomenal appearances through touch and smell. However, here the commonalities end.

Some contributors discuss the plant's surface structures and morphology, chemistry and physiological effects in terms of biomedicine and biology, while others explain its materiality in local terms of relatedness. Some present clinical, chemical and other empirical data; others voice doubts as to whether the cultural practices, which involve humans and plants in daily life, are meant to produce the sort of empirical knowledge that scientists call 'objective'. People often make use of plants in ways that emphasize an unmediated, direct relatedness of humans to their environment. Moreover, medical practices that involve plants are often best interpreted in the light of the material significance they have for maintaining social relations. Hence, the contributions in this volume are perhaps best characterized as medical anthropological rather than ethnomedical in orientation.[3]

Outline of the Book

The volume begins with two contributions that concern the history of plants in medical practice. Stephen Harris opens with a beautiful blend of the historical, the practical and the taxonomical in his discussion of the long and ongoing history of plants in cultural exchanges. He thereby debunks the stereotype that each ethnic group has its own medicinal plants. By highlighting that the *materia medica* of any society incorporates plants from varied provenance, he counters the naïve idea of one culture, one medicine, one pharmacopeia. Since time immemorial, the movement of plants between societies was often prompted by practical knowledge of their usefulness, which sometimes led to new medical routines, and sometimes to entirely new applications of the plant. As the technology of transport proliferated, plant exchanges increased around the globe. In this light, the current practices of bioprospecting are merely the latest chapter in a long history of borrowing and stealing, trading and exchanging plants and plant materials.

Harris notes that culturally known applications may change over time and in different contexts. People may transport plants or their seed from one place to the other, but not always the cultural knowledge that motivated the transfer in the first place. For example, ginkgo fruit was recommended in China, but leaf extracts are now used in the West. *Artemisia annua* L. is nowadays known as an anti-malarial but its earliest recordings document its use for treating so-called 'female haemorrhoids'.[4] Although one may be inclined to argue that 'empirical knowledge' appears to be key to the cross-cultural exchanges Harris describes, his observations actually question this assumption. The ways in which plants are put to medical use, and affect human bodies with their culture-specific sensitivities, and the knowledge that arises from those interactions, are highly complex.

The second article focuses on one age-old Chinese herbal remedy, *qing hao* (Herba *Artemisiae annuae*, sweet wormwood), which has been found to contain the anti-malarial artemisinin that is currently recommended by the World Health Organisation in combination with other anti-malarials. Elisabeth Hsu provides a longitudinal study of this herbal preparation's name, usages and effects in the Chinese *materia medica*. Although the materials analysed in this article are textual, she is concerned with practice. She demonstrates

how the history of the cultural practices of preparing the plant for medical use is paralleled by a history of changes in purported medical efficacy. In particular, she shows that an ingenious invention of plant preparation, namely wringing out the fresh plant after soaking it in water, led to the recommendation of using it in the treatment of acute fever episodes.

Hsu critiques the concept of 'natural herbs' as remedy. She emphasizes that every plant-based preparation was developed through a series of cultural practices, and therefore speaks of *qing hao* as a 'drug' rather than a 'natural herb'. Herbal remedies, just like pharmaceutical drugs, are subject to culture-specific processing. Their therapeutic efficacy depends on the timing of collection of the plants; the techniques of persuading plants to be effective, sometimes through spells and charms, sometimes by cunning action; and their mode of preparation. Modes of preparation may involve culturally specific forms of cutting, drying, frying, cooking, fermenting, often mixed with other cultural-specific products, such as the ashes of particular cloths, chalk or lime, honey, and the like. They may furthermore involve combination with other plant, animal and mineral ingredients from the *materia medica*. Modes of application (oral, parenteral, external) also play a role, as do their dosage and timing (at which stage in the course of the illness, at which frequency, when in the day). These procedures, which require what Ingold (2000a and b) calls 'enskilment', also encompass aesthetic considerations, cultural dispositions and local history, which shape the medical practice of using plants alongside observations of how they impinge on bodily processes.

The two historical accounts are complemented by two anthropological contributions that foreground social practice in specific localities. Françoise Barbira Freedman, who worked for over twenty years among the Lamista Quechua in northwest Amazonia, addresses a blatantly obvious topic that to date has barely been explored. In line with many other authors, she notes that female shamans are exceptional in Amazonia, although she is careful to nuance the different ways in which they are subordinate to their male relatives (after all, every female shaman is linked through ties of kinship or affinity, or both, to male shamans). Barbira Freedman argues that the material plant world, with which shamans engage,

and their access to the spirit world, are gendered. This finding leads her to a critical engagement with the notion of gender in Amazonia.

Barbira Freedman highlights the fact that most plants are paired, where each pair comprises a male and female counterpart. She provides concrete examples of such pairs of water plants, which belong in a cosmological female domain, and plants of the upland forests, which cosmologically are a male domain. She details the parts used and their colours, the mother spirits they have, the different shades of shamanic knowledge required to access them, the known pharmaco-active substances and the local conditions they treat. She then argues that the gendering of plants and spirits and the ensuing shamanic gender dynamics are best understood in the light of how action is conceptualized in Amazonian contexts. There is the well-known predation, which generally is seen in opposition to seduction, to which must be added an additional action, that of taming. Male shamans make themselves attractive to spirits in the same way as women do to men: they relate to plant spirits in terms of seduction and taming.

Wenzel Geissler and Ruth Prince, by contrast, engage in a research project that aims to overcome thinking in terms of homologies and attends to the materiality of the people and plants involved in medical practice. They stress that social relatedness is constituted through practices that involve plants. Since plants grow in certain places to which people are related, their materiality can modulate social relations and rectify transgressions. Geissler and Prince stress that the practice-derived knowledge of plants is not positive, objective knowledge in the indicative mood, nor is it a sort of belief. Rather, the Luo know their plants in the subjunctive mode. Their knowledge of plants is intrinsic to social situations within which an attitude of 'trying out' prevails. This disposition of 'trying out' differs fundamentally from that of acquiring objective 'empirical knowledge'. The authors emphasize the playfulness of these situations. They describe how a grandmother identifies and selects the relevant plants, digs them out, throws them into a bucket of hot water and applies them externally to her grandchildren: she cherishes and strokes, rubs and gently touches the skin of toddlers who delight in the washing and obviously are the centre of everyone's attention. This, the Luo say, enhances growth. Perhaps many so-called ethnomedicinal practices

fall into the realm of preventive care and stand out primarily for the life-affirmative sociality they generate?

The volume ends with two portrayals of specific plants, which are both shrouded in legend. One concerns the portrayal of one of the oldest and most robust plant species on this planet, *Ginkgo biloba* L., the second is an account of a group of plants – the caffeine-containing plants, which humans all over the globe have recognized for their stimulating and mood-modulating effects. The fruits of *Ginkgo biloba* are described in the traditional Chinese *materia medica*, but its leaf extracts are currently marketed to combat memory loss and for treating Alzheimer's disease. Broadly speaking, the article concerns knowledge production and the question of how to test effectiveness. Where Luo mothers have an attitude of 'trying them out' in ways that do not lead to positive, clearly bounded, objective knowledge, the double-blinded randomized control trials (RCTs) aim precisely to produce such factual knowledge. Sir John Grimley Evans demonstrates that RCTs of the leaf extract *Ginkgo biloba* do not meet rigorous scientific criteria and, accordingly, he voices doubts about the clinical efficacy of this herbal remedy. However, this is not the end of the story.

Grimley Evans furthermore points out that the measurement of clinical reality through RCTs is historically contingent and was culturally warranted by health services particular to the U.K. Their beginnings can be traced to the slaughter of the First World War, which, in turn, led to social movements within British society against the aristocratic social strata that were held responsible for it; this brought about a revolutionizing of health care and, after the Second World War, resulted in the institutionalization of the National Health Service. He suggests that RCTs were developed and refined within this socialist institution of a patronizing state. Without invoking any verbose social theory, he demonstrates that the current gold standard for evaluating CAM (complementary and alternative medicines) in the U.K. – and ethnobotanical and ethnomedical knowledge more generally – is 'history turned into nature'. His article ends with a recommendation on how to refine the trials in order to determine the clinical effects and physiological mechanisms of the leaf extract *Gingko biloba*.

The volume concludes with an ethnobotanist's viewpoint which, like the opening article by a botanist, provides a global perspective.

Caroline Weckerle, Philip Blumenshine and Verena Timbul begin with the chemistry of plants. They note that every plant species that produces caffeine has become a culturally known plant in geographically disparate regions and in completely different societies. This is all the more remarkable as caffeine is produced by only six genera in the entire plant world, in entirely unrelated families (more recently, it has been found also in a seventh genus, *Citrus*). Regardless of which part of the plant (leaves, fruit or seeds), in which part of the world and in which ecological niche the caffeine-containing plants grew, human beings have ritualized their use.

Weckerle and colleagues insist on the importance of the chemical compound of caffeine within the plants, and its ubiquitously observed chemical effects on the human body, and explain its cultural history in this light. These findings are easily worked into a bioculturalist argument, but the authors go beyond that to expand on the cultural diversity of the way in which caffeine-containing plant use affected, and was affected by, different forms of sociality. The article ends with a juxtaposition of different legends on how these plants were discovered, which have as a recurrent theme that humans observed how caffeine-containing plants affected animals. This highlights the fact that the direct interrelatedness between humans and the environment may often involve humans, plants and animals.

Common Sense

The focus of the book is on practices that involve plants. While it stresses their cultural, social and situational specificity, it aims to discuss them with regard to a cross-culturally relevant dimension of doing, namely that which people consider as common sense. In English common parlance, common sense is positively valued: 'You don't have to think about it' and 'it feels right'; you take it for granted; it is a desirable attribute of both academics and the peoples they study. Initially, these peoples may appear to engage in strange practices that upon closer inspection turn out to be 'common sensical'.

However, among politicians, common sense seems to be invoked particularly by the conservative ones and, for this reason, the revolutionary thinker Gramsci (1891–1937) developed ambivalence towards common sense. As Crehan (2002: 114) comments: 'for

those who are interested in radical social change, common sense, apart from its nucleus of good sense, is something to be opposed'.[5] In scholarly circles, common sense has variously made its entry into the literature, most recently in the cognitive sciences, where it is often equated with 'intuitive knowledge' and opposed to 'counter-intuitive knowledge', where the latter is considered to have cognitive effects that are particularly advantageous for cultural transmission (Boyer 1996). In the cognitive sciences, common sense is often equated to cross-culturally found, basic, empirical knowledge that is considered pan-human (e.g. Atran 1990). However, as argued in what follows, common sense has yet another facet of meaning.

The notion of common sense that is relevant for us here elaborates on meanings evoked by an Enlightenment philosopher in order to argue that human beings perceive the ongoing processes of their social and natural environment in an unmediated and direct way. In a sustained argument against the early modern empiricist understanding of perception,[6] this philosopher, Thomas Reid (1710–1796), raised examples of hypothetical situations where what he called common sense would trigger humans into action. His later commentators, such as Madden, Wolterstorff and Van Cleve (see below), remarked that Reid's discussion of common sense was perhaps the least developed aspect of his philosophy and philosophically not well founded. However, what presents an unresolved problem to philosophers may well be a fruitful theme of exploration for anthropologists, particularly those who consider humans to interact with the material and living environment in unmediated and direct ways.

If common sense is freed from its appropriation in the cognitive sciences as basic factual knowledge about the world, and if, as argued below, the attitude of 'taking for granted' is not mistaken as a proposition about belief, but rather as a form of enskilled practice, common sense can be understood as a sort of social action at the interface of knowledge and practice that is crucial for all human beings in daily life. Rather than reducing scientific knowledge, religious belief and common sense to a kind of basic factual knowledge, one could let oneself be inspired by Gramsci (1971: 330), who highlighted continuities between 'science, religion and common sense'. One could argue that there are three different modalities of the way in which humans interact with the natural environment: in scientific frameworks, religious contexts, or those practice-based

day-to-day involvements with the environment that the notion of common sense invokes.

With this in mind, namely, that humans interact with plants in a practice-based modality, this introductory essay discusses recent research relevant to ethnobotany and medical anthropology. First, it summarizes major issues in medical anthropology in response to an article that outlined a study programme of the interface between ethnomedicine and ethnobotany (Waldstein and Adams 2006). This is followed by a critical appraisal of 'common sense' in the ethnobotanical literature that associates itself with the cognitive sciences. It thereby highlights the limitations of the empiricist approach in assessing how plants are used in medical practice. After a brief excursion into the anthropology of material culture and Science and Technology Studies (STS), which put materials and materiality centre stage, the essay presents James Gibson's *Ecological approach to visual perception* ([1979] 1986) as relevant for anthropological research because it provides a basis for radically rethinking the empiricist understanding of the perceptual processes currently labelled as sensation, perception and cognition, which are key to our current understanding at how humans relate to their environments. The article ends by pointing out that Ingold's notion of enskilment and the 'taking for granted' that Thomas Reid's common sense implies can open up a field for anthropological research on the unmediated, direct connectedness between humans and their material environment. It is hoped that the study of plants in medical practice, undertaken in this conceptual framework that takes the organism-in-the-environment as a single analytic entity, may feed constructively into innovative medical anthropological research on the materiality of the body and cause fertile discussion within the ethnobotanical research programme, so that the current chasm may ultimately be reduced.

Disease, Illness, Sickness, and Local Biologies

From its inception, medical anthropology engaged with local knowledge, wherever possible, in ways that took seriously local epistemologies and ontologies.[7] While ethnobiological research concerned with mapping local classifications of plant knowledge

onto modern botanical taxa has proven fertile (e.g. Berlin 1992, Atran 1990, Ellen 1993), ethnoscientific attempts (e.g. Frake 1961) to account for nosological taxonomies were attacked even in early medical anthropological publications (e.g. Good 1977). The taxonomic approach to disease quickly became outdated in medical anthropology, as had the classificatory medicine centuries earlier (Foucault [1963] 1976: 4), even if it persists, in modified form, in some of the contemporary anatomo-clinical fields.

Ethnobotany and medical anthropology both engage with the interface of the biological and cultural, but apparently the biological presents itself in different ways in those two fields. It would appear that human beings show more cross-cultural continuities in the handling and conceiving of flowering plant taxa and vertebrates than in dealing with and conceptualizing sickness events. For the realist who relies on findings produced through natural scientific empiricist research, the explanation for this may well lie in the complex biology of the diseased human being in its interaction with the environment and other people. With the exception of germ theory, which classifies disease in respect of the taxonomy of the aetiological pathogens, many conditions that people perceive as sickness generally have aetiologies and pathologies which are much less distinctive (Pelling 1993).

Despite its exceptional status, germ theory and its emphasis on aetiological agents as classificatory factors continues to provide the prototype for understanding biomedical processes, particularly in ethnomedicine and applied medical anthropology. While Green (1999) rightly calls for a research agenda away from witchcraft towards investigating local conceptions of infectious diseases, which are a daily concern in Africa, and while there certainly is a place for the ethnomedical research that Waldstein and Adams (2006) advocate,[8] their research continues to endorse an outdated and ethnocentric toolkit. They continue to adhere to Foster and Anderson (1978), for example, who, according to aetiological considerations, classed the world's medical systems into two types: personalistic and naturalistic. Medical anthropologists have long criticized this typology. Not only does it overemphasize aetiological considerations, it also projects onto other medical systems the epistemological distinction the Western sciences make between 'empirical' knowledge (naturalistic aspects) and unexplained, so-called 'supernatural' forces (personalistic aspects). If researchers really have an urge to divide the world's

medical systems into two types, Young (1976) has long sketched out an alternative framework that highlights contrasting and overlapping features between 'externalizing' and 'internalizing' medical systems. Young's typology, which does justice to local conceptualizations, can be used productively in cross-cultural comparison. More radically, the medical systems approach has long been shown to be problematic, not least because it overemphasizes doctrinal knowledge contained in systematizing written medical corpuses (Last 1981) and grossly overestimates people's interest in illness causation (Pool 1994).

In medical anthropology, an early attempt to account for biological continuities and culture-specific conceptualizations consisted of differentiating between 'disease' and 'illness'. Kleinman (1980: 72) defined disease as 'the malfunctioning of biological and/or psychological processes' and illness as 'the psychosocial experience and meaning of perceived disease'. He developed this definition on the basis of fieldwork in Taiwan, where he attended to patients suffering from psychiatric problems, including depression. His research was important as it went against the prevalent racist tenor of public opinion (and scientific research that continued well into the 1950s), according to which only those peoples who had a sufficient 'degree of introspection and verbalization' could develop depression, such as the Jewish people or the Protestant Hutterites (Littlewood and Lipsedge 1982: 65–66). Other peoples, foremost 'the Black', were stereotyped as 'happy-go-lucky', 'feckless child[ren] of nature', 'unburdened by the heavy responsibilities of civilization', with 'irrepressible high spirits', 'little self-control' and an 'apparently boundless sexual appetite'. (ibid.) Kleinman provided important evidence in favour of interpreting depression as a universal biological malfunction, a 'disease' that affected all populations. He achieved this by accounting for the different complaints presented by patients in the U.S.A. and Taiwan as 'illness' experiences. The signs and symptoms of the illness were different but the disease the same. Symptoms of feeling unhappy and unworthy among Caucasians arose from a process of 'psychologizing' dysphoric affect but feelings of an oppressed chest and dizziness, as observed among Taiwanese, were attributed to a 'somatization' of distress.[9]

Kleinman's notions of 'illness' and 'disease' were instantly criticized (Frankenberg 1980, Taussig 1980, Young 1982), even, to a certain extent, by the author himself (Kleinman 1988). However, both notions

continue to figure prominently in the ethnomedical literature (e.g. Waldstein and Adams 2006). Accounts of 'illness' have been criticized for focusing too narrowly on the individual's experience as elicited by a physician during a clinical consultation, and for insufficiently attending to social, historical, economic and political processes that shape cultural perceptions and the sickness experience. By contrast, the definition of 'sickness' as relating to 'socially recognisable meanings' of biological dysfunction (Young 1982: 210) expresses a social critique. However, again, ethnomedicine tends to overlook this definition of sickness, which intrinsically is critical of the existent social order, and continues to use sickness as a vague blanket term.

Kleinman's notion of 'disease' was at the time not as loudly criticized as his understandings of 'illness', although today the term 'disease' no longer refers to the 'biological dysfunction' itself but to the biomedical knowledge about it. The sociology of science and STS (science and technology studies) have evidently affected medical anthropological thinking and today the term 'disease' generally designates the sickness event in terms of 'external modern medical criteria', much in the sense it long had had in Lewis (1976: 129). The biomedical sciences consider diseases to arise from biological processes that affect all populations. Accordingly, there is a tendency among medical anthropologists to view diseases as universal entities that affect human beings in identical ways, even though the social idioms in which they are experienced may differ. However, this understanding of the interface of the biological and social is based on a modern European understanding of personhood and disease, which became prevalent with the rise of hospital medicine in Europe (Foucault [1963] 1976) but has since been heavily contested.

The disorder that lent itself to a sustained critique of 'disease' as a universal biological entity was the 'menopausal syndrome'. Lock (1993) found that the Japanese women she worked with did not talk about the hot flashes that epitomized menopause in North America because they did not have the bodily experience of them, or if they did, then not to the same degree. Lock (1993: 373) attributed these culture-specific differences in symptom reporting to different physical experiences: 'If we are to move beyond the usual mind-body dichotomy that sees either culture as dominant and biology as essentially irrelevant or, conversely, biology as an immutable base and culture as a distortion, then it is essential that we acknowledge the

plasticity of biology and its interdependence with culture.' Biologies are not universal but vary with locality, and are affected by culture. When Lock coined the term 'local biologies', she spoke of sickness as a biological process, shaped by local cultural practices, understood in terms of the explanations favoured by local biological sciences. The notion of local biologies did away with the mind-body dichotomy intrinsic to the notions of 'disease' and 'illness', and, like the notion of 'sickness', attended to the power relations intrinsic to medical knowledge production.

Depression is a 'mental condition', menopause a newly discovered 'syndrome', but even a prototypical 'germ disease' like malaria varies with locality. This finding of recent biomedical research is generally underplayed in the social sciences, and yet, if one takes account of the varied biological manifestations of a biomedically-identified disease (Hsu 2009), new possibilities arise in order to explain other peoples' medical practice in more 'realist' ways.[10] In the case of the 'germ disease' malaria, for instance, recent research in the biomedical sciences highlights the fact that we can no longer equate the fever episodes directly with the taxonomies of the species that is the pathogen.[11] Nowadays, the biomedical-recognized aspects of malaria are thought to arise from the interplay of at least four biological factors: parasite, host, environment and co-morbidity.[12] These not only determine the severity of the sickness event but also its varied manifestations in intermittent fevers, convulsions, joint pains, flu-like symptoms, anaemia and listlessness. Accordingly, the wide-ranging culturally understood effectiveness of plants with anti-malarial properties may have a more 'real' basis than anthropologists and ethnobotanists usually accord them.

Until very recently, it was almost a sacrilege within medical anthropology to admit to genetic differences or physiological processes within the phenotype (which to biologists are self-evident), and to speak of biological realities that are species- or race-specific or particular to an individual's life history, and which vary with geographic locality, ecology, climate, weather and seasons, just as the cultural perception and experience of them may vary. Furthermore, it was highly suspect for any medical anthropological study on the cultural constructedness of sickness and the body politic to show any interest in the constitutive biological processes. There are good reasons for this, as anthropological research has historically fed

into a racializing and racist discourse, despite the fact that genetic diversity within a single ape species, like that of the chimpanzees, in one single geographic African region is greater than the genetic diversity among all humans worldwide (Jobling et al. 2004: 217–22). Lock (1993) was one of the first to insist that medical anthropology cannot ignore recent advances in the biomedical sciences. [13]

Empiricism, Objectivity and the Epistemic Virtue of Maintaining Detached Subject-Object Relations

It would be an epistemological fallacy to consider the 'empirical knowledge' that the natural sciences and biomedical research produce to be the only kind of knowledge that a 'realist' position (in the anthropologist Brian Morris's sense) could produce in regard to humans-in-the-environment. Of course 'empirical knowledge' has its place in anthropology, but the 'empiricist' stance on which the scientific method relies, which produces this 'empirical knowledge', has its limitations, as argued here, even for those who do not consider everything humans experience to be a mere cultural construct. What is contested here is merely one aspect of the general empiricist principle that the world out there can be known through sense perception. This one aspect is that 'empirical knowledge', which is meant to be 'objective', must be derived in a subject-object relation, where the scientific human investigator, ideally, is detached from the object of investigation, the 'natural world'. [14]

In a project termed 'collective empiricism', which outlines three kinds of sight, Daston and Galison (2007: 378–79) have convincingly demonstrated that the word 'objectivity' has multiple layers of meaning, 'more than a mille-feuille'. On the one hand, 'critics have attacked it [objectivity] as a fraud, an impersonal mask that veils the very personal and ideological interests it purports to suppress, or as a crime and arrogant attempt to play god by pretending to a view from everywhere and nowhere'. On the other hand, the scientists themselves adhere to at least two different epistemic virtues of objectivity, which Daston and Galison dub 'mechanical' and 'structural', each with 'different metaphysical, methodological and moral commitments'. Daston and Galison argue that no one ever made an attempt to erase completely

the 'scientific self' wedded to the epistemic virtues of approximating truth, objectivity and judgment. Rather, they argue, 'its practices, like all techniques of the self, cultivated certain aspects of the self at the expense of others' (Daston and Galison 2007: 381).

The epistemic virtue of 'being true-to-nature', which continues to be the predominant paradigm in botany and ethnobotany, required the scientific self to develop synthetic perception and selective memory and to acquire the skill of drawing botanical specimens as ideal types. The epistemic virtue of 'mechanical or structural objectivity' required the hard-working scientist, equipped with either a camera or with mathematical formulae, to resist wishful thinking, to attend to the particular, and to calculate or record mechanically. Finally, the epistemic virtue of 'trained judgement', that in Daston and Galison's (2007: 314, 363, 371) view supplemented the previous two virtues, considered the scientific self as an expert, who can trust well-schooled intuitions and who recognizes family resemblances in recurrent patterns between families of objects. As Daston and Galison (2007: 381) note, these modes of 'plumbing nature's types' - registering its appearances and intuiting its patterns - had one goal: 'a faithful representation of nature'. It arose through engagement with the natural environment in a subject-object relation and required a clear separation between the observer and the observed.

The problem with this empiricist understanding of perception is its insistence on the detachment of the observer from the object as the ideal mode of acquiring knowledge about it, when, for instance in the context of ethnobotany, it is blatantly apparent that the application of plants in medical practice makes them part of a nexus: a nexus of human beings in social relations interacting with plants that in turn are interacting with culturally-sensitized bodies in a culturally-modified natural environment and in socially-specific moments. Attempting to account for a nexus of interrelatedness by treating interrelatedness as a problem and 'noise', when it is crucial to this nexus, appears to be a fundamentally flawed epistemic attitude. Rather, we should find methods of exploring human-environment interactions in ways other than those required by the empiricist stance that dominates the natural sciences, which is that the observer be detached from the object observed.

Admittedly, botanists will respond that although natural scientific methods may be counterintuitive, they yield the most accurate

knowledge possible on human-plant-applied-to-maintaining-health interrelations. Well aware of Schroedinger's dictum that any observation in particle physics is distorted by observation, they justify their methods by stressing that their findings are the best possible approximations to reality. Natural scientists who produce such 'empirical' knowledge do not see a need to question its philosophical assumptions and only in exceptional cases, as in Grimley Evans', do they inquire into the sociology of how it is produced.

However, the application of plants in medical practice poses epistemological and ontological problems for medical anthropologists, in particular, for critical medical anthropologists.[15] For them, there is no knowledge about other human beings, themselves, and the environment that does not rely on a culture-specific form of interaction. The negotiated intersubjective knowledge that makes up these social realities encapsulates knowledge about biological realities, which is not detached, out there, but here, in hand. This knowledge arises in negotiation with the materiality of the plants and the human bodies with which they are put in interaction (and such interaction with biological realities, in turn, affects sociality). Geissler and Prince, in particular, stress that practices pertaining to plants make them part of social life and generate particular forms of sociality. The activities they describe, and the attitude with which people undertake them, are the result less of reflection and ratiocination than of 'doing'. Grandmother, mother and child are engaging in a habit of doing something that to them falls into the realm of what one could call 'common sense'.

Scott Atran on Common Sense, Empiricism and the Nominalist Fallacy in Ethnobiology

As already noted, Roy Ellen is puzzled that medical anthropology pays scant attention to the work of ethnobiologists. He speaks of a 'lack' within medical anthropology. It would appear, as outlined above, that the epistemological premises in each field, rather than the cultural practices themselves, provide the main obstacle. Medicinal ethnobotany and ethnomedicine tend to treat knowledge about plants in medical practice as 'empirical knowledge', but medical anthropology has always engaged with questions of knowledge production in a critical way.

One could argue that the domain specificity of the biological reality explains the divergence. The biological reality of the plant world – it presents itself in persistent discontinuities that invites the researcher to group plants into clearly bounded categories – differs from that of diseases that always arise from complex host-environment interdependencies. A realist (in Morris's or Latour's sense) could argue therefore that the dominant research agendas differ in ethnobotany and medical anthropology. A sociologist of knowledge would additionally point out that from the very beginning medical anthropology drew its rationale from its claim of complementing the biomedical knowledge of biological processes and aimed at competence in accounting for the social, cultural, political and economic aspects of sickness. The narrative turn in medical anthropology gained such currency not least because it alluded to a different ontology – truth as constructed through narrative – for explaining illness events that prevail in industrialized countries (such as chronic pain, which poses as yet unresolved problems to biomedicine, if not philosophically insurmountable ones).

By contrast, ethnobiological research was among the earliest to provide evidence against the strong programme of cultural relativism and social constructivism (e.g. Diamond 1966; Berlin et al. 1974; Hunn 1977; Berlin 1992; Ellen 1993; Berlin and Berlin 1996). With hindsight, the engagement of ethnobiology with difference, namely lists of indigenous and Linnaean botanical terms of modern plant taxa, led to conclusions that emphasize cognitive continuities between different peoples. People all around the world consider different kinds of plants to 'fall into groups within groups' and form distinctive morpho-behavioural gestalts. Many folk taxa largely conform to the modern genera, and those of flowering plants and vertebrates often coincide even at the species level.[16] Atran (1990) has made this point forcefully, with overwhelming data and detail, reinforced by cognitive anthropological arguments. In contrast to the variability of the biological manifestations in the human body that may trigger the perception of a sickness episode, research on ethnobotanical taxa emphasizes cognitive universality and cross-cultural continuities.

Atran refers to 'common sense' as a pan-human mode of thinking. Common sense evidently is at the core of ethnobiology, and, as is argued here, it is an issue also in medical anthropology. It is also implicit in all the various projects of this volume. As erudite as

Harris' exposition on plant exchanges may appear, the reasons for explaining them appeal to common sense. Common sense is also central to Hsu's critique of the 'natural herb'. Barbira Freedman elaborates on common sensical gender relations and Geissler and Prince's account on the practices of child care is steeped in common sense. Grimley Evans' critique of the unreflected enthusiasm about a CAM remedy appeals as much to common sense as it calls for an improvement in treatment evaluation, while the findings of Weckerle, Blumenshine and Timbul on caffeine-containing plants represent a prime example of common sense in Atran's sense. It would appear that in this volume common sense arises as a theme in the context of exploring the social configurations into which enskilled practices of the everyday are enfolded, rather than from the zeal to find the pan-human cognitive schemas that drives so many ethnobiological studies. And yet, despite the emphasis on practice here and on cognition there, on the everyday here and on the expert there, one senses that overlaps may be possible.

When Atran (1990: 1–3) uses common sense to refer to 'ordinary thinking', one may see continuities to the concerns of several authors in this book. However, Atran then continues by defining common sense as 'what, in all societies is considered … a manifestly perceivable empirical fact'. Common sense accordingly includes statements pertaining to 'an innately-grounded, and species-specific, apprehension of the spatio-temporal, geometrical, chromatic, chemical, and organic world in which we … live.' Atran insists that 'common sense remains valid only as long as it is restricted to the manifestly visible dimensions of the everyday world, that is, to phenomenal reality'. He contrasts common sense with speculative reason, reflection and experimentation. He stresses that 'in this scenario, common sense does not preclude, but neither does it include, any magical, mythico-religious, metaphorical or other "symbolic" elaboration'. This is certainly a useful definition of common sense for the project Atran thereafter embarks on, where he highlights continuities between different folk biologies and, in a tour de force of the history of what today would broadly fall into the realm of botanical knowledge, leads the reader to the emergence of modern scientific taxonomy. However, for our purposes Atran's definition of common sense is not very useful.

To a Luo mother or Chinese doctor, and I would claim even to a modern Western scientist, there is no manifestly perceivable empirical fact that does not convey what Atran would call a metaphorical or symbolic message. People who use plants in medical practice do not distinguish between fact and symbol in the way an idealized scientist would do. When the Dinka said to Godfrey Lienhardt (1954) that some men are lions, this was common sense. But it was not a manifestly perceivable empirical fact to the ethnographer. Nor was it said in a figurative way. Lienhardt deplores the limited conceptual toolkit of the anthropologist who can only differentiate between literal and metaphorical meaning. He also doubts the usefulness of invoking a *mentalité primitive*. There are problems of translation, no doubt, but Lienhardt goes further and wishes to find other devices for explaining this Dinka statement.[17] Along similar lines, his brother Peter Lienhardt (1968: 58) highlighted in his discussion of sorcery on the Swahili coast the observation that acts of murder are attributed to sorcery and magic, regardless of whether they were committed by ultimately physical means – for instance, by cutting the victim's throat with a knife (a manifestly perceivable empirical fact) – or by using medicines at a distance (which leave no traces to the uninitiated observer). The point of reminding us of these classical anthropological works is that anthropology has long held that common sense does not coincide with empirical fact and that any anthropological study that distinguishes between a manifestly perceivable empirical fact and symbolic elaboration is ultimately untenable. Ellen (2006: S9) is acutely aware that the interrelationships between what he calls 'mundane' and 'symbolic' 'are often far from clear'.[18]

Nevertheless, Atran's allusion to common sense strikes a chord, in particular when he speaks of the innately grounded species-specific apprehension of the world we live in. He alludes here to commonalities of human beings in their dealings with and perception of the world, which they derive from what empiricists call the condition of being human. Common sense evidently has a wide semantic stretch. It refers to: (a) diverse but culturally unquestioned conventions; (b) knowledge that is considered basic to all humans; and, as will be argued in more detail below, (c) a practical enskilment of the human organism into the environment, such that a unity ensues which is taken for granted in an unreflected way and which may or may not be culture-specific or pan-human. Atran's notion of common sense,

in line with that in the cognitive sciences, refers to (b): a genetically conditioned mode of plant recognition that he considers to be pan-human.

Ellen (2006) does hint at common sense as an enskilment of humans-into-the-environment when he outlines the limits of ethnobiological classification, drawing almost exclusively on lexicography and ethnolinguistics, and when he comments that practical and embodied ethnobiological knowledge is difficult to transform into written knowledge. Ellen even mentions 'knowledge and enskilment' and speaks of 'the relationship between cognition as a mental activity and the learned body routines which act on and in the world but are not necessarily simply the enaction of mental processes' (Ellen 2006: S8). This comes close to Lave's (1988) insight that grand cognitive schemas cannot account for the particular instances of arithmetic problem solving that occur in everyday life, actions which she found to be nested into culturally-structured settings. However, while Lave stresses that cognition is a complex social process that involves mind, body, action and setting, Ellen falls back into the nominalist fallacy (that naming something defines its essence) when in the following sentence he considers the above approach to enable a 'more accurate modelling of real-world categories'. But categories are in the mind not in the world out there! For medical anthropologists who learnt about narrative theory, Ellen's statement has unreflected, idealistic overtones.

The Anthropological Study of Material Culture and Bruno Latour's 'Realistic Realism'

In order to make sense of how plants become part of medical practice, the medical anthropologist turns here to inspiration from research on material culture, which does not appear to be as entrenched in scientism as ethnobiology (and the sort of nominalism just encountered). Plant materials applied in medical practice are after all material culture: due to culture-specific preparations they are turned into cultural artefacts.

Plants have materiality in that 'they are part of substantial ties, emerging from relations and establishing or rebuilding relations'.

Geissler and Prince (in this volume) are clearly drawing on insights from the anthropological study of material culture when, rather than highlighting tensions between the material properties of the plant as known through the natural sciences and their perception in social practice, they discuss how people perceive plants and become practically engaged with them. They evidently account for the plants' materiality in a manner that, as Tilley (unpubl.: 2) outlined in a response to Ingold, consists of exploring 'landscapes, contexts, movements, social and political strategies'.

If medical treatment is intended to transform the patient's status from ill to healthy, the preoccupation with material transformations that one finds among anthropologists of material culture promises to provide further insight. The enchantment of magic results from the artist's ability 'to make what is not out of what is, and to make what is out of what is not' (Gell 1999: 174). The shaman's powers can make manifest the cause of an underlying affliction through a stone or feather, extracted from underneath the patient's skin. The immaterial is transformed into the material.

The material also derives its importance from the immaterial. Miller (2005) ruminates on the way in which the soul's immortality is expressed in the monumental materiality of the Egyptian pyramids. Engelke (2005) discusses how honey becomes holy as it is imbued with the immateriality of the Pentecostal Holy Spirit. He contrasts the materiality of the pebble, which can be found anywhere, is easily replaced and is special-because-it-is-not, the materiality of water, which is scarce, but multi-vocalic in meaning, even outside the Christian context, and powerful precisely because of this, with the materiality of the sweet and sticky holy honey in Pentecostal healing among the Masowe Chishanu in Zimbabwe. This sticky sweetness, he suggests, makes honey highly desirable not merely for spiritual but also for more mundane, material reasons.

To be sure, what medical anthropologists are confronted with is not always easily categorized as either material or immaterial. The stuff that causes good fortune and luck in Mongolia, into which a medical anthropologist can read a cultural logic for explaining differences in health status,[19] would at first approximation appear immaterial and merely indexed by materials: a hair from the child's first hair cutting, a piece of umbilical cord kept in a family chest, contained and separated, for the purpose of maintaining relatedness (Empson

2007). By maintaining family relations and relations to one's place of origin in this indexical way, an individual is sure to thrive. One can go even further. In some people's daily practice, fortune is not only indexed by the material but material stuff in and of itself. As Holbraad (2007) notes in his exploration of what constitutes the power of the powder that in Ifá divination seances makes present the divine, the anthropology of *mana*-concepts cannot be buried yet. Holbraad suggests conceiving of them in a Latourian manner as both concepts and things (i.e. ontological hybrids). Life forces, ancestral presence, spiritual efficaciousness all assert themselves through a sort of motion that need not be immaterial, much like wind is 'air in motion' (*cf.* Hsu and Low 2008). Apart from the performative power of words (Tambiah 1968), it is perhaps the materiality of the breath in the speaking of secret spells that brings into motion the power in plants, as recorded in so many ethnographies (e.g. Bellman 1975).

Medical anthropology has disappointingly little to say on material culture in the medical field (Hsu 2002), despite recent efforts (e.g. Luedtke 2007), except for the currents that come together in science and technology studies (STS), but those do not generally address questions relevant to the application of plants in medical practice, nor do they take an interest in how spiritual powers become instantiated in the material world.

Among the currents of medical anthropology that do address material medical culture belongs the anthropology of pharmaceuticals. However, it is curiously uninterested in the materiality of drugs: it emphasizes meaning (Etkin and Tan 1994), socio-economic and cultural interpretation (Nichter and Nichter 1996), symbolic efficacy (Moerman 2002) and social efficacy (Whyte et al. 2003).[20] As good medical anthropologists, the anthropologists of pharmaceuticals have left the discussion of the drugs and their physiological effects to biomedicine, accounted for socio-cultural aspects, and thereby inadvertently reinforced the Cartesian dualism that has set the agenda for the medical anthropological project.

There is certainly important other medical anthropological research that aims at overcoming this Cartesian dualism: research on 'transcendental somatic states' and experiences of 'resonance' or 'true fellow-feeling' (Blacking 1977), the 'mindful body' (Scheper-Hughes and Lock 1987), 'overlapping, anaphoric combinatorial approaches and bodily routines' instead of codified knowledge (Parkin 1995),

'embodiment' and 'somatic modes of attention' (Csordas 1994, 2002), 'sensory attentiveness' (Desjarlais 1996), 'trans-individual systems of communication' (Seremetakis 1998), the 'body-in-mind' (Lambek 1998), and also much other research that often relies on Bourdieu's (1977, 1984) practice theory and Merleau-Ponty's phenomenology ([1945] 1962). However, Bourdieu's discussion of *habitus*, inspired by Panofsky's (1957) relating to architectural styles, is curiously disembodied, in contrast to the *habitus* and bodily routines described in Mauss ([1934] 1973). Ingold (2000a:170), exclaims: 'The embodiment of culture, in short, leads to nothing less than the disembodiment of the organism!'

Merleau-Ponty did emphasize immediacy between the self and its environment, and medical anthropology built on this insight in so far as it takes the body as a starting point for any exploration of the world. The body is taken as the foundation of human existence and as the generative principle through which the self apprehends the world. However, rather than focusing on the body-as-directly-related-to-the-world, as given in Merleau-Ponty's phenomenology, medical anthropologists have foregrounded the self and made the self-as-individual-body, detached from its environment, into a topic of research, much the same as it is in biomedicine.

It has been noted that anthropologists – and medical anthropologists in particular – draw almost exclusively on the phenomenology of Merleau-Ponty, to the exclusion of Husserl and others (Sugishita 2006). The study of material culture refers at times to Heidegger. Thus, Ingold (2000a:172–88) elaborates on Heidegger's notion of dwelling in his discussion of architecture and the built-up material environment, and Gosden (2007: 183) may ultimately be drawing on Heidegger (*cf.* Gosden 1994), when he suggests concentrating 'on time and temporality as a key aspect of the relationship between people and things': the stages of making a pot consist of 'sequenced negotiations' between human agents and the materials they work on, where the 'material nature' in interaction with a person's 'skills' create an end result. This process of 'transubstantiation' is paraphrased as 'the changing of objects into social relations' (Gosden 2007: 185). For Ingold, and Gosden, the starting point is the material world outside the body. The social and the mental world arise subsequently through the processes by which human beings engage in a bodily skilled manner with the material world.

While referring neither to Ingold's dwelling perspective nor to Gosden's transubstantiation, Rival's (2006, 2007) most recent work on 'historical ecology' and 'domesticating the landscape' takes a strikingly similar interest in humans as agents who nest themselves into their living environment of plants and animals, whose material appearance they thereby transform, genetically, and otherwise. However, in medical anthropology the self-in-its-natural-environment is usually only discussed in medical ecology (e.g. McElroy and Townsend 2004) and bioculturalism (e.g. Ulijaszek 2007).

The environments of the self with which critical medical anthropologists have engaged are often of an institutional kind: different niches of biomedicine and public health (e.g. Lindenbaum and Lock 1993, Good 1994, Young 1995, Nichter and Lock 2002, Mol 2002). Science and Technology Studies deserve to be mentioned at greater length here, as they have long highlighted the continuities between the self and the technological environment, and stress interdependencies between the self, material culture, society and the 'natural' environment. Latour (2000: 109) asks: 'what could it mean, according to mainstream social sciences, to provide a social explanation of a natural phenomenon?' His reply is a focus on the 'thing', which he defines as the 'assembly in charge of composing the common world' (Latour 2000: 120). So, if we treat plants as 'things in medical practice', would that mean that any medical-anthropological-cum-ethnobotanical research project advances into the limelight of a Latourian STS project?

Summarizing what Whitehead (1920) called a 'bifurcation of nature' and other arguments made in *Pandora's Hope* (Latour 1999), Latour (2000: 118) unveils the 'formidable political ploy' of the natural sciences to distinguish between primary and secondary qualities: 'Primary qualities define the real stuff out of which nature is made, particles, strings, atoms, genes, depending on the discipline, while secondary qualities define the way that people subjectively represent this same universe'. This, he points out, results in a political incapacitation of the ordinary persons' knowledge of the world: 'While what is visible, lived, felt, is, to be sure, subjectively essential but utterly inessential, since it is not how the universe is made up'. Scientists sum up the primary qualities of one Nature, while 'the secondary qualities … divide us into multiple points of view which may be subjectively relevant but are objectively (in the

traditional sense) irrelevant'. Although Latour does not call himself a phenomenologist, he thereby restores the validity of the ordinary person's perception of the environment, which will become central to the line of argumentation presented below. Latour emphasizes the political forces that are thereby freed.

Furthermore, Latour (2000: 109) discusses the fundamental flaw of the functionalist stance that sees in a social explanation the substitution of an 'object pertaining to nature' by one 'pertaining to society'. He (Latour 2000: 111–12) bitingly notes that 'one can become accepted in the salons of the social sciences, but only on the condition of not providing an explanation of what one deals with', 'namely what the *thingness* of this thing actually is'. As noted above, this certainly applies to many medical anthropologists. In contrast to the conceptual relativist and social constructivist, Latour (2000) does not consider science as just another language game, and in contradistinction to the scientific realist, he does not assume a gap between the world and the language about the world. He calls himself a 'realistic realist'. A social explanation, he suggests, consists of a translation process from the practices in the fieldwork terrain into a scientific language. 'The translators at work', as Stalder (2000) notes in a book review of *Pandora's Hope*, 'are ontological hybrids in the sense that they are simultaneously an object that is belonging to the world and a concept that is belonging to the word'. One such hybrid that is used by natural scientists is the pedocomparator. It is an object in that it is a suitcase full of specimens of soil and it is simultaneously a scientific concept in being 'an abstraction of the continuous soil variations in discrete bits of information, packed, ordered, and precisely numbered in the suitcase'. Another 'ontological hybrid' that Latour (1999: 192) describes in an attempt to tackle the social scientific problem of whether 'guns kill people' or 'guns do not kill, people kill people' is the 'object institution', which treats humans and their artefacts as one single entity. If Latour's 'realistic realism' is applied to the discussion of plants in medical practice, human beings and the plants they use are conceived as forming a unity, and this 'object institution' or 'corporate body', in turn, constitutes the starting point for a social scientific explanation.

Latour is certainly not alone in advocating that the ontological gap between concepts and the material world is not as large as philosophy would have it. In his articles about basket making and

weaving, Ingold (2000a, 2000b) aims at dissolving the gap between learnt human activity and innate animal behaviour. Ingold does not speak of 'ontological hybrids'. The theoretical concept he elaborates is that of 'enskilment'. A skill, he says, 'cannot be regarded simply as a technique of the body' (Ingold 2000a:352). 'Skill, in short, is a property not of the individual human body as a biophysical entity, a thing in itself, but of the total field of relations constituted by the presence of the organism-person, indissolubly body and mind, in a richly structured environment' (Ingold 2000a:353). Ingold evidently also treats the artefact and human being as a single entity, but he does not call himself a 'realistic realist'. Rather, he alignes himself with ecology: 'that is why the study of skill, in my view, not only benefits from, but *demands* an ecological approach' (Ingold 2000a:353). We will return to this Ingoldian ecological approach later.

Farquhar and Lock (2007: 12) argued for integrating Latourian STS into medical anthropology when they outlined as future research agenda 'a materialism of lived bodies': 'All these recent efforts could be said to be seeking a new style of materialism, neither reductive and economistic nor sealed off from the traditional humanistic concerns of signification, subjectivity, and ethics.' Farquhar and Lock consider the social constructivist studies necessary and important for 'denaturalizing' generally held assumptions but these need to be complemented with 'new empirical research'. Farquhar and Lock (2007: 11) state: 'the problematic of perceiving bodily life in its actual empirical and material forms invites scholars to see social multiplicity more clearly and to adjust our actions more sensitively to the depths at which human being varies'. Notably, however, Farquhar and Lock do not endorse Latour's realistic realism, but advocate an empiricist stance.

Any medical anthropologist with realist inclinations will welcome Farquhar and Lock's call to attend to materiality in medicine, but their suggestion of 'perceiving bodily life' in an 'actual empirical and material form' (Farquhar and Lock 2007: 11) seems to invoke precisely the Cartesian dualism that they aim to overcome. Many authors confuse 'empiricist' with 'realist' endeavours. As already stated, acknowledgement of empirical data certainly has its place in critical medical anthropology. However, when it comes to the perceptions of bodily life it is questionable whether those are always best approximated through empirical data (elicited through scientific

methods of detached observation and objectification). When it comes to questions of perception, and to 'perceiving bodily life', the empiricist stance is limited and may even be misleading.

The Ecological Critique of the Empiricist Stance on Perception

The idea that the self is intrinsic to and inseparable from perception, which phenomenology emphasizes, goes diametrically against the empiricist paradigm of perception. This is of particular interest to the researcher confronted with plants in medical practice, considering that the empiricist principle of perception is the dominant paradigm in the natural sciences, cognitive anthropology and ethnobiology. The empiricist paradigm posits that perception is initiated by external stimulation, and is hence a passive process: as the real world sends out different stimuli, sensory receptors are stimulated, sensations are felt, then transported to the brain, and there processed into perception. Psychophysical research of the nineteenth century on 'passive touch' is an example *par excellence* of an empiricist programme that was revolutionized by phenomenologists. In particular, the phenomenologist psychologist David Katz (1884–1954) stressed the importance of the hand and its active exploration of surfaces, arguing that it was the active engagement with the environment that elicited stimuli.[21]

One could claim that even an empiricist considers the self to be an integral aspect of perception and category formation if the self is located in the brain: stimuli from the external world impress themselves on the sense receptors, generating sensations that are transported to the brain, which then processes these sensory inputs, based on the individual's store of knowledge that, as philosophers of the Enlightenment period had it, was either innate knowledge, experientially accumulated knowledge or knowledge about the world derived from rational inference. Gibson ([1979] 1986: 25) caricatures this model of passive perception: 'it is supposed that sensation occurs first, perception occurs next, and knowledge occurs last, a progression from the lower to the higher mental processes'. It continues to be the predominant model in psychology. Most recently, it also has found entry in the anthropology of the senses.

Hinton et al. (2008: 139) declare in the first sentence of *The Medical Anthropology of Sensations*: 'In psychological theory, sensations are the first experiential responses to stimuli that ultimately lead to (or become incorporated into) more elaborate perceptions of objects and events.'

However, such empiricist understanding of perception and category formation has long been criticized from within psychology. Gibson's ([1979] 1986) *Ecological Approach to Visual Perception* radically revises our thinking about visual perception, and perception in general. He emphasizes that human beings are animals in an environment and that the animal's perceptual system is attuned to the environment such that the animal can avoid danger, orient and reproduce itself. Apart from invoking this otherwise undifferentiated Darwinian axiom, which is that the behaviour and morphology of organisms have the function to ensure reproduction and the continuation of the species, there is little that a biologist has learnt about perception which Gibson does not question. Perhaps, the most baffling is that Gibson does not consider sensation as an intermediary for perception. He rejects the assumption that perception is based on the inputs of the sensory channels, subject to cognitive processing (Gibson 1986: 238). This viewpoint and related ones are upheld and reinforced, he says, by generalizing the findings of 'peephole observation' to ordinary perception (Gibson 1986: 168). He contends that laboratory experiments may not yield results which are relevant to real life. Natural visual perception does not happen just in the head, and certainly not in a head that is made immobile as in the laboratory. Rather, Gibson speaks of a perceptual system, which involves 'eyes in the head on a body supported by the ground' (Gibson 1986: 1). This perceptual system includes the striated musculature, locomotion and manipulations with one's hands, an ensemble which in his view is indispensable for making the perceptual process happen but which, in turn, also depends on perception (Gibson 1986: 223).[22]

Natural vision does not just happen in the head. Nor does it happen in a state divorced from self-awareness. It involves the organism's constant awareness of the environment and of itself in it. Gibson provides an anatomical reason for explaining why the human organism has a heightened self-awareness in visual perception: the frontal positioning of the eyes. While their frontal positioning is usually thought to have evolved because of evolutionary hunting

advantages due to stereoscopy, Gibson downplays the stereoscopic effects of frontal positioning. Instead, he stresses that the frontal positioning of the eyes produces a reduced visual field in comparison to that of animals with lateral eyes. A reduced visual field increases the observer's self-awareness.[23] This self-awareness is an integral part of perception: what is visually perceived, simultaneously and directly, are both the physical properties and the meanings they have relative to the animal. Gibson speaks of affordances that point both ways, to the environment and the observer in it.[24]

By conceiving of the organism-in-the-environment as a unit, and by postulating a direct and unmediated connectedness between the self-conscious organism and the environment, Gibson can overcome the dichotomy intrinsic to the empiricist understanding of perception which differentiates between sensation as a physical process and perception as the meaning-making mental process. People may have visual sensations but these may be quite unrelated to the perceptual process, Gibson claims. He vehemently rejects the idea that natural vision is based on an information-enriching process of a series of flat pictures that appear 'like pan cakes' on the retina. Rather, natural visual perception involves 'picking up', 'differentiating' and 'extracting' information from the flowing array of the light in which an organism is immersed and which reflects from the surfaces in its surroundings.[25]

Visual perception as 'information pickup' makes a clear-cut separation between perception and what in Gibson's (1986: 258, 263) view are 'non-cognitive kinds of awareness' such as fantasy, fiction, dreams and hallucinations, while it closes the supposed gap between perception and knowledge. The ecological understanding of direct perception calls for a new theory of cognition. Indeed, when Gibson emphasizes that visual perception arises from an active engagement with the environment, which involves locomotion and manipulation, he reminds us that cognition resides in doing, that cognitive categories are formed in social practice and through interaction with the material environment. Perceiving is doing, and this in constant awareness of a self that is interested in what the environment can provide for it.

Thomas Reid on Common Sense: Neither 'Believing' Nor 'Knowing' but 'Taking for Granted'

As shown above, the empiricist understanding of so-called 'passive' perception, which is that the real world sends out stimuli that are impressed on the sense organs which, in turn, produce sensations that are then processed into perception in the brain, has been criticized from various angles: Heidegger's 'being-in-the-world', Merleau-Ponty's body as a generative principle of perception, Katz's research on the role of the moving hand in active touch and Gibson's ecological approach to visual perception. These authors all emphasize that perception relies on a direct connectivity between an organism and its surroundings, which the organism actively explores. In this context it is noteworthy that, the British empiricists John Locke (1632–1704), George Berkeley (1685–1753), David Hume (1711–1776) and their theories of perception were already criticized two centuries earlier by a contemporary of theirs: Thomas Reid (1710–1796), who is known as a 'realist' (someone who holds that there are physical things existing outside the mind) and for his work on common sense.[26]

Reid is also known for decoupling sensation from perception. He considered sensation to have an ontologically entirely different status from perception. While there are ambiguities in Reid's writings on this subject (see Van Cleve 2004: 114–19), there are many passages where he rejects the empiricists' assumption that sensation is an intermediary stage of perception (strikingly similar to Gibson). Madden (1986: 261) explains: 'Sensation, which has nothing in common with perception, suggests perception to the mind because the mind is so constructed to interpret it in that way. Thus, the sensation and the native capacity in the mind together result in the completely new act of the mind, perception, which is an immediate apprehension of, and belief in, the existence of properties inhering in objects.' For Reid 'perception is a new mental act'; it 'may be suggested by a sensation but is not mediated by it' (Madden 1986: 261). Reid 'repeats endlessly the claim that perception is a function of our nature or constitution and is not a matter of passive sensation, as the British empiricists would have it'. However, 'he also repeatedly

insisted that how this comes about we haven't the slightest idea' (Madden 1986: 261). Madden stresses that Reid's nativistic ideas about perception make him a 'natural realist'.

Noteworthy for our purposes is the fact that Reid and Gibson independently came to conceive of humans as being directly cued into their environment. Both reject sensations as intermediaries in the process of perception. Reid did not systematically investigate how the native capacity in the mind, together with sensations, triggered the perceptual process, while Gibson alludes to a Darwinian axiom. Furthermore, both stress that the perceiver's self-awareness is an intrinsic aspect of the perceptual process. This allowed Reid to solve a well-known empiricist problem of perceptual relativity by differentiating between real and apparent magnitude, where the apparent magnitude is a function of the relation between the object and the perceiver (Van Cleve 2004: 103). Of course a contemporary researcher would not want to adopt Reid's philosophy in every aspect. His writings, which predate Darwin, remind us that a researcher can adopt a realist position and work on human-environment interactions without instantly submitting to either the empiricist understanding of passive perception or the Neo-Darwinian biocultural programme. Notably, the two botanists Harris and Weckerle discuss data that lends itself to a bioculturalist argument but neither has accorded it centre stage. Rather, both deal with the way in which the people themselves experience and perceive the plants, and with socio-political power relations, historical accident and technological development in the light of how they affected knowledge production and instituted new daily routines, themes that are central to critical medical anthropology.

Reid's realism also led him to invoke common sense. This was, however, the weakest aspect of his philosophy (Wolterstorff 2004: 78).[27] Perhaps common sense is a problem which philosophers may identify but which anthropologists may more successfully investigate? Since its beginnings, anthropology has been concerned with 'beliefs' and 'modes of thought', a theme that also resurfaced in different guises (technologies of persuasion, styles of knowing) in the sociology of knowledge and in critical medical anthropology. The anthropologist's recourse to the notion of 'belief' has since been critiqued by many authors, who incidentally understand the term

in very different ways. Needham (1972) reminded us that peoples' activities are not grounded in belief as a credo that entails certainty and faith, but for Good (1994) belief expressed a lack of other people's objective knowledge and certainty: we have knowledge, they have beliefs. Important here is that the debates surrounding 'belief' highlight differences in modalities of knowing, as does the notion of 'common sense'.

Reid's comments on common sense are often interpreted, as Atran (1990: 3) did, as a foundation of all thought and practice. However, is that what Reid actually meant when he invoked the principles of common sense? As already noted, his principles of common sense are probably 'the least carefully formulated part of his philosophy' (Wolterstorff 2004: 78). It therefore comes as no surprise that some commentators have misconstrued commonsensism as 'essentially a faith in oneself – a conviction that a human being by proceeding cautiously, is capable of knowing the world in which it finds itself' (Chrishom 1998: 453). Chrisholm's words 'faith' and 'knowing' are evidently misplaced here, particularly following a recapitulation of Needham's and Good's comments on them. Wolterstorff's (2004: 89) comments are more insightful. According to him, Reid understood the principles of common sense in at least two ways. Reid can indeed be interpreted to have defined them as 'first principles in our reasoning', a philosophical idea that was not very original and can be traced to Aristotle. However, Reid's common sense can also be interpreted as 'things we all do and must take for granted in our everyday lives', which apparently was 'not at all traditional' (Wolterstorff 2004: 89). One can go a step further here and argue that Thomas Reid's writings on common sense remind us that 'taking-for-granted' is not a kind of knowledge but falls into the domain of practice.

Rehabilitating Common Sense as a Practical Stance of Taking the Human-in-the-Environment as a Continuum

Common sense is often misunderstood to designate a self-confident position of 'I know most of what I think I know' (Cardinal et al. 2004: 33). Gramsci accused conservative politicians who were opposed

to social change of invoking common sense in this sense and the cognitive sciences currently uphold common sense in this sense as a 'first principle in our reasoning'. As Wolterstorff intimates, common sense in this sense expresses a philosophical idea that can be traced to Aristotle. However, as argued here, 'taking for granted' may primarily refer to an attitude of the person engaged in doing things rather than of the person who claims to reflect on things and know.

First, it is important to distinguish between the attitudes of 'taking for granted' and 'believing'. As Wolterstorff (2004: 88) notes, they are different propositional attitudes: 'We take for granted all sorts of things that we never bring to the point of being something we believe; one does not have to believe something to take it for granted. Taking a proposition for granted is a different propositional attitude from believing it; one can do the former with respect to a certain proposition, without doing the latter.' For Woltersdorff, this propositional attitude of common sense is a mode of thought: he speaks of it as a 'line of thought' when he states that Reid's 'things-taken-for-granted line of thought' was not at all traditional (Wolterstorff 2004: 89). However, what if we go a step further, and, inspired by Reid, rehabilitate common sense as an attitude that refers to human beings involved in practice, rather than in reflections of the mind?

In other words, 'taking for granted' may be as much a mode of doing as a mode of thinking, just as 'trying out' is a form of social action. Perhaps, in certain situations of ordinary life, human beings are prompted into this attitude of engaging with the environment by doing, rather than by deliberating over what could be done and, perhaps, they have the disposition to be prompted into this attitude of doing in a 'taking-for-granted' fashion only in those situations. Reid seems to have had such situations in mind, of unreflectively doing things, when he invoked the notion of common sense. In these situations human beings act in a way that would suggest they are in direct connection with the environment and form a continuum with it.

Atran's understanding of common sense has elsewhere been attacked in a richly documented re-examination of what can be said both for and against a thesis of cross-cultural universals and the contrary thesis of cultural relativity (Lloyd 2007). However, Lloyd's critique refers to common sense in much the same Aristotelian sense as Atran, namely as propositional knowledge: a first principle in our

reasoning. The difference is that Atran makes claims to universality where Lloyd does not. However, Lloyd does not attend to the materiality of the living world and the implications this may have for being in it. Nor does Lloyd focus on the indeterminacy between human-environment interactions, perception and cognition.

Our discussion of common sense, by contrast, does so. It aims to rehabilitate and elaborate on Reid's realist notion of common sense in a way that points in the same direction as Ingold and Latour. To do this, we have to reiterate that common sense is not a self-confident propositional attitude derived from reliance on factual knowledge, which in the empiricist sciences relies on humans interacting with nature in subject-object relations, where the scientific self, as an ideally detached 'subject', makes natural processes to 'objects' of investigation. Latour and Ingold have in their own languages both hinted that the chasm between the subject and the object, the word and the world, the human being and the artefact is not as large as the contemporary sciences intimate. In a similar vein, let us rehabilitate the notion of common sense as pointing to a human disposition that arises in certain situations where the practice-based modes of human interaction with the material environment happen in a 'taking-for-granted' manner. In those situations where practice relies on common sense, the human-beings-interacting-with-the-material-environment and, in our case, the-plant-materials-of-the-environment-in-interaction-with-human-beings form a continuum.

The propositional attitude of 'taking for granted' that this understanding of common sense invokes is similar to that of 'trying out' in so far as it consists of doing rather than knowing. Recent research on how people take the natural phenomenon of wind for granted, integrate it into their everyday practices of hunting, mourning, dancing, dreaming or healing, and experience it accordingly (Hsu and Low 2008), may highlight new directions for medical anthropologists and ethnobotanists wishing to explore the 'taking for granted' that implicates plants into medical practice. It brings to mind Ingold's (2000a) notion of enskilment, Latour's (1999) hybrid ontologies, and, building on Ingold and Latour, Grasseni's (2007) ecology of practice. Latour emphasizes that the generally assumed gap between the concept and the thing is a social construct; Ingold stresses that all cultural forms that skilled practice results in are intrinsic to the thing-in-relation-to-the-agent; and Grasseni, elaborating on both,

argues that cognition and skill develop in the course of social actors acquiring and applying techniques that incorporate the material world into a web of social hierarchies and relations. Accordingly, a herbal drug's therapeutic effectiveness is neither solely a function of plant chemistry nor of the culture-specific theory of the practitioner who applies the plant, nor of the expectations of the patient. Rather, it results from a skilled practice of putting practitioner-patient-plant-in-the-environment into interaction.

Concluding Remarks

According to the above explorations, the interface between ethnobotany and medical anthropology has not been much explored, less because of disinterest in or inaccessibility of the cultural practices observed, but rather because of differences in the dominant epistemologies within these two sub-disciplines of anthropology. Recent developments in ethnobiology and cognitive anthropology have led to research that produces observations interpreted in the light of pan-human cognitive schemas (although there are some voices that stress the nested knowledge of situated practice). Medical anthropology, with its emphasis on cultural, social and symbolic meanings, and its emphasis on the cultural constructedness of many medical phenomena, has not actually engaged with the socio-cultural problems that the materiality of medical cultures poses (although, again, there are some exceptions).

As suggested here, if common sense is understood as a term that describes a situation-specific practical stance of engaging with the material world, it is likely to attract the attention of both ethnobiologists and medical anthropologists as a theme worth exploration. It certainly raises questions of knowledge production in daily practice-based interactions with it. Critical medical anthropologists may furthermore draw on inspiration from the anthropological study of material culture and incorporate ecological thinking that takes human-beings-in-their-environment as a whole into their research, rather than leaving ecological concerns to medical ecologist and bioculturalist researchers alone, which ultimately explain social processes in a Neo-Darwinian framework. Perhaps, medical anthropologists and ethnobotanists may find ways along

these lines to engage with the 'phytotherapeutic realities' Roy Ellen speaks of, and 'the health practices of most people on our planet'.

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Notes

1. The project began in the third year after the master's course in medical anthropology had been instituted at the University of Oxford, where, between January and March 2003, the editors organized a research seminar series on 'Plants, Health and Healing', to which Françoise Barbira Freedman, Sir John Grimley Evans, Michael Heinrich and Caroline Weckerle contributed. Wenzel Geissler and Ruth Prince joined later. Michael Heinrich's contribution has since been published online (Heinrich 2005).
2. For anthropologists, Brian Morris's (1997) definition of 'realism', as opposed to the 'idealism' of the strong cultural constructivist programme, suffices here: 'Realism entails the view that material things exist independently of human sense experience and cognition' (p.318). In philosophy, realism often has a bad press, particularly 'naïve realism' (Cardinal et al. 2004:88). An exception is Latour (1999), who calls himself a 'realistic realist'. The multiple meanings of 'realism' and 'empiricism' will require more nuanced definitions (see note 14 below).
3. Ethnomedicine is not as troubled by the social modes of scientific/medical knowledge production as medical anthropology has been since its inception (see section 'Disease, Illness, Sickness and Local Biologies' in this chapter). Within public health, ethnomedical and applied research certainly have their merits. However, medical anthropologists find it difficult to engage with the preoccupations of ethnomedical researchers because of the latter's continued adherence to a rather ethnocentric social analytic toolkit.
4. A researcher interested in a realist interpretation (which needless to say is impossible to give with any certainty for such an ancient text and which therefore relies on educated guesswork) may be interested to know that

ticks, which attach themselves to the soft tissue of the anus and are full of blood, exude a red liquid (see Hsu, chapter 2 in this volume).

5. Farquhar and Lock (2007) refer to 'Cartesian common sense' and 'bourgeois common sense' in a derogatory way, which makes the notion of 'common sense' appear extremely reactionary, but Gramsci was, in fact, more nuanced and ambivalent.
6. The notion of empiricism is discussed in note 14 below.
7. Epistemology is a field of philosophy interested in how knowledge is generated, whereas ontology is a field of philosophy interested in questions of what constitutes 'being'. Both are buzz words in anthropology, with accordingly vague meanings.
8. Ethnomedicine, like ethnobotany, is far less concerned with epistemological and ontological questions.
9. Although Kleinman's (1980) concept of disease as a universal biological substratum, onto which was grafted illness as a culture-specific experience, should overcome racist science, it is difficult not to read a deprecating tone into his analysis of the illness experience: 'In Chinese culture, suppression, lack of differentiation, minimization, displacement and somatic substitution are the dominant mechanisms employed by individuals. In the United States, expression, differentiation, vigilant focusing are the dominant cognitive coping strategies for managing affect, at least among the middle-class Caucasians' (p.172). His later writings contain important revisions of this position (e.g. Kleinman 1988).
10. The term 'realist' is used here in the wide sense in which the anthropologist Brian Morris (1997) used it (not in the philosophical sense of scientific realism, see van Fraassen 1980:7–8). Importantly, it refers here both to knowledge produced through the empirical natural sciences (grounded in an empiricist stance towards perception and theory) and to knowledge derived from the experience of immersing oneself in the world (as posited by the phenomenologist stance on perception).
11. Plasmodium malariae Feletti and Grassi causes the 'quartan', i.e. four-day fever cycles; Plasmodium vivax Feletti and Grassi is known as the 'benign tertian' because it produces fevers in cycles of three days, without being lethal; and Plasmodium falciparum Welch causes the 'malignant tertian' which can be fatal.
12. A) Parasite factors: malaria is caused by four different Plasmodium species (Plasmodium ovale Stephens, in addition to the three mentioned in note 11 above), each of which has a distinctive geographic and ecological distribution. Within each Plasmodium species, there is strain variation, whereby some strains are more pathogenic than others to certain humans. B) Host factors: human blood types and haemoglobin variants can have a large influence on the expression of the disease; a well-known example is

sickle-cell anaemia which is protective of malaria. C) Environmental factors: in regions where malaria is endemic, adults whose immune system allowed them to survive childhood present with flu-like symptoms, joint pains and anaemia. In environments with relatively fewer infected mosquitoes and low malaria transmission rates, cases of morbidity and their severity rises disproportionately compared to places where transmission rates are higher. D) Co-morbidity: depending on other infections, the immune response may be weakened, and hence the sickness may manifest more severely. Furthermore, it appears that malaria facilitates a wide range of other infections, so that in some areas deaths secondary to malaria (indirect malaria mortality) can be at least as great as mortality directly attributed to malaria (cf. Warrell and Gilles 2003).

13. Nevertheless, the biomedical establishment currently favours genetic research at the expense, for instance, of epidemiological research on environmental factors (Doll, quoted in Darby 2003:378).
14. 'Empiricism is not a single, specific philosophical position' (van Fraassen 2002:13), and it is used in such different ways that one is inclined to avoid the term. However, since the words 'empiricist' and 'realist' occur in anthropological polemics, and this essay concerns the relation between the natural world of plants and our engagement with them, a footnote on the term 'empiricism' is warranted, even if it comes across as dilettante. One generally understands empiricists to adopt the cherished attitude of deriving rules of practice from observation and experience of the natural world. However, the notion of empiricism in the 'empiricist postulate' I mention can be more narrowly defined. It is a definition, though, as van Fraassen (2002:34) emphasizes, which arises from a position of the late nineteenth century that favoured Kant's transcendental idealism: historians of philosophy then created a narrative which pitted the rationalists on the continent against the empiricists on the British Isles, before Kant came onto the scene and demonstrated that they were equally mistaken. Leibniz was the rationalist who considered concepts to be derived from innate ideas (a marble block); Locke, the empiricist, argued that they derived from sense data: sensations were thought in the course of our experiencing the world to furnish the blank slate (*tabula rasa*) that is our mind (van Fraassen 2002:34). This 'empiricist' postulate that sense stimuli give rise to perceptions, which in turn lead to concept formation, continues to be the main paradigm in empirical psychology, and it is this aspect of empiricism, in particular, that is questioned here.

    In the seventeenth century, the Enlightenment empiricists who set the foundations for this model of how sensation affects perception and cognition claimed philosophical superiority over the 'realists', whom they considered to be conservative adherents of the Aristotelian tradition that

explained regularities in nature through 'substantial forms of different natures' (van Fraassen 1980:1). Since the reasons for these observed regularities were thought to be inherent to the substantial forms of natures, philosophers who had nativist ideas were called realists (e.g. Thomas Reid). Accordingly, any biologist who attributes primacy to the genetic make-up of organisms would be a realist, although contemporary biologists adhere to an empiricist theory that denies the reality of Aristotelian causal properties. Indeed, natural scientists are Aristotelian, says Latour (1998), but for another reason: because of their epistemic insistence on the validity of knowledge production in subject-object relations. Therefore, in the twenty-first century natural scientists can usually be attacked as being both realists and empiricists, and therefore, perhaps, the two terms are easily confused. The point I wish to make is that not every realist need adhere to the empiricist postulate of perceiving the environment.

15. The term 'critical medical anthropology' is confusing because it is used by medical anthropologists who have a Marxist orientation (and who rarely question the empirical knowledge production of the natural sciences) and by medical anthropologists who draw on literary criticism (who do question empiricist modes of knowledge production). Both are 'critical' of the current order of society and aim at providing a social critique.
16. Biologists often recognize complex single Linnaean species, whilst folk taxonomies recognize many more. In some cases modern research has split single Linnaean taxa into taxa recognized by folk taxonomies, for example, in the Mexican legume genus *Leucaena* (Hughes 1998) and in the Costa Rican skipper butterfly *Astraptes* (Hebert et al. 2004).
17. He hints at the possibility that serial analogies may provide the clue to the problem (Lienhardt 1954:106).
18. The research Ellen invokes in support of this is by anthropologists whose main contributions are either outside ethnobiology or went beyond it: Fox (1971), Rosaldo (1972), Ellen (1993), Healey (1993), Rival (1998).
19. Research presented at the conference 'Economies of Fortune and Luck: Perspectives from Inner Asia and Beyond' on 5–7 June 2008 made clear to medical anthropologists not merely how normative the term 'health' is but, worse still, how impoverished their conceptual toolkit is for accounting for differences in health status.
20. Van der Geest and Whyte (1989) focus on drugs as things but their discussion centres on meaning: the metaphoric and metonymic meanings of being 'thingy'. An exception is perhaps to be found in research on indigenous notions of compatibility (e.g. *hiyang*) between drugs and individual bodies, which relates the perceived materiality of medicines to sociality (e.g. Hardon 1994).

21. Empiricist psychophysicists of the nineteenth century applied sensory stimuli to the skin in order to identify sense receptors and their distribution. These physical structures were then thought to correspond to different sensations of touch (but this assumption has proved to be untenable in the light of the skin's many different tactile perceptions). The phenomenologists' research on 'active touch' went diametrically against the view that stimuli are impressed on sense organs. As a result, the Pacinian corpuscules, whose anatomical structure had long been known without the psychophysicists being able to identify their function, were found to be receptors of vibration, which is a sensation/perception caused by movement and 'active touch' (see Hsu 2000:261–63, and references therein).
22. Gibson's ideas have direct resonances with David Katz's stress on the importance of the hand's movements for tactile perception, but Gibson's bibliography suggests that he came to his conclusions independently. Leder (1990:17) remarks that many phenomenologists, among them Erwin Straus, noted that 'the classical distinction between perception and movement is in fact highly artificial, dividing in reflection what is always united in lived experience'.
23. Frontal eyes are generally thought to have evolved in predators for 'depth perception', but precisely because none of the experiments on depth perception for selecting suitable pilots in the Second World War predicted their success or failure in the real world, Gibson started to design experiments that led him in entirely new directions. The evolutionary advantage of frontal eyes is thus less 'depth perception' than 'self-awareness'. (If one takes Gibson's idea further, frontal perception may have evolved in predators, like cats, because it was an advantage for them to have greater self-awareness during the hunt. Primarily for this reason of greater self-awareness, it may have been further developed in social animals, like primates.)
24. The affordances of the environment are what frontal vision offers the animal, what it provides or furnishes, either for good or ill. Gibson's notion of affordances comes strikingly close to Straus's observation that things may be either 'alluring' or 'frightening', and either attract or repulse the perceiver, but Erwin Straus is not mentioned in Gibson's bibliography.
25. The notion of 'surfaces', which features so centrally in Gibson's theory, is reminiscent of the vocabulary of phenomenologists. However, again, Gibson's bibliography indicates no debt to phenomenology.
26. Naturally, it is difficult for an anthropologist without any appropriate training to appreciate the writings of any philosopher of the Enlightenment period, such as Reid's *Inquiries into the Human Mind on the Principles of Common Sense* (1764) and *Essays on the Intellectual Powers of Man* (1785). No claim can be made that his own ideas are accurately presented here. For this, with regard to his theory of perception, see for instance Nichols (2007).

This essay draws on select contemporary philosophers, whose comments on Reid's writings were most inspiring for developing the argument that common sense is a form of doing (a situation-specific form of social action in which humans interact with aspects of the environment, such as with plants as recognized, prepared, applied and appreciated in medical practice, in unmediated, but enskilled ways).

27. Does this suggest that the realist position is not without logical problems? Can an idealist argue in a logically more consequential way? It leads to conclusions, however, that Reid found at odds with common sense (Van Cleve 2004:104).

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