In Defense of the Nature/Culture Distinction:

Why Environmental Anthropology Can Neither Dispense With, Nor be Reduced to, Semiotics

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Abstract

This paper argues against the grain of much recent work in environmental anthropology and related disciplines by pleading for a resurrection, albeit in refined form, of the widely rejected distinction between Nature and Culture. In dialogue with Tim Ingold's 'relational-ecological-developmental' approach to human-environmental relations, it discusses the role of culture and symbolic systems in two classical but very different problems of human ecology and human biology. The first concerns ecological explanations of food taboos in indigenous Amazonia, the second biological explanations of social differences in identity and behavior. Both cases represent attempts to exclude the symbolic or cultural dimension from explanations of human behavior, in the former case by arguing that it is macro-determined by ecosystems, in the latter that it is micro-determined by genes. Rather than reduce Culture to Nature, or vice versa, the paper offers an analytical framework for more differentiated distinctions between those aspects of human bodies and landscapes that require semiotic explanations, and those that do not.

Keywords

Nature/Culture distinction; anthropology; semiotics; culture; food taboos; nature/nurture

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A number of recent contributions to environmental anthropology and related disciplines have focused on deconstructing the 'Western' or 'modernist' distinction between Nature and Culture, or Nature and Society (cf. Latour 1993 [1991]; Croll & Parkin 1992; Hirsch & O'Hanlon 1995; Descola & Pálsson 1996; Ellen & Fukui 1996; Ingold 2000a). Particularly prominent in this discourse is the innovative and intriguing position of Tim Ingold's (2000a:5) 'relational-ecological-developmental' approach to human behavior, which ultimately proposes that we can dispense with the distinction between biology and culture. This paper attempts to reconcile this highly persuasive approach with a plea for retaining the notion of 'culture' as a distinct analytical category that continues to be indispensable. Rather than throwing the baby out with the bathwater – and writing the obituary of 'culture' – it argues for a further refinement of our analytical tools for understanding human-environmental relations.

[1] I thank the Bank of Sweden Tercentenary Foundation for supporting the project 'Native American Ecocosmologies and Environmental Ethics: Animism, Modernity, and the Cultural Phenomenology of Human-Environmental Relations.' This paper was originally presented in the panel 'Beyond universalism and relativism,' organized by Tim Ingold at the Ninth International Conference on Hunting and Gathering Societies, Edinburgh, September 9-13, 2002.

Anthropology: A science of contingency

Various versions of universalism in anthropology can be interpreted in terms of a fundamental desire to 'explain' reality (here: cross-cultural variation) as *non-arbitrary*, a desire that, paradoxically, in itself might qualify as a human universal, arguably underlying religion and science and much everyday cognition as well. This desire to eliminate contingency is particularly problematic in a science devoted to understanding human behavior, as human behavior is everywhere mediated by *meanings*, and meanings are in turn inherently arbitrary. A central statement of this position is Marshall Sahlins' classic *Culture and Practical Reason* (1976a), a book that is worth returning to whenever we find ourselves arguing with universalists or determinists of one kind or another. If we accept Charles Sanders Peirce's definition of a *symbol* as based on a conventional relation between sign and object, then all culture – all human meaning-creation – implies contingency and a significant measure of arbitrariness. The message of social constructionism is basically that of elementary culture theory: in the organization of human reality, *things could have been otherwise*. Determinism is difficult to reconcile with semiotics. Every sign presupposes an interpreter – a *subject* – and freedom is a cornerstone of interpretation.

Yet since its inception anthropology has been engaged in a struggle to resist the temptations of universalism. Whether evolutionism, functionalism, or even structuralism, models attempting to account for human behavior as predictable, rule-governed, and ultimately rational have attracted generations of anthropologists hoping to develop a true 'science' of culture. During the last half-century this kind of orientation has been represented quite explicitly, for instance, by cultural ecology, cultural materialism, formalism (i.e. microeconomic theory), optimal foraging theory, and sociobiology. Whether invoking adaptation, utility, maximization, or fitness, the ambition of these schools has been to peel off

the arbitrariness of human experience and interpretation in order to uncover the underlying rationality – and *rationale* – of even the most idiosyncratic of behaviors.

The problem with such approaches is that they tend to be excessively abstract, tautological, and ultimately incapable of accounting for those very specifics of human life that they claim to account for. They tend to assume the appearance of retrospective rationalizations rather than demonstrating the predictive capacity that we should expect from models that claim to dispel arbitrariness and contingency. For example, we are not helped by the observation that 'Economic Man' finds commodities useful because of their 'utility,' or that a given population has survived until today because of the 'fitness' of whatever it has been doing over the past few millennia. Whether individuals in the market, or populations in evolution, their strategies could surely have been otherwise, without necessarily jeopardizing survival.

To say this is not to advocate the kind of cultural solipsism that refuses to acknowledge the existence of objective and absolute constraints on human creativity. The post-modern attempt to relinquish all 'master narratives' should not be allowed to reduce the non-human environment to a question of semiotics, i.e. a 'cultural construction.' The Second Law of Thermodynamics, for instance, is surely a significant factor in accounting for the uneven, global distribution of industrial technology (Hornborg 2001a). The argument here is rather that such universal constraints should not be sought in the practice of culture itself – as if the human imagination was inherently pragmatic and geared to maximal success – but in the materiality of the world in which it is practiced. However much it goes against the grain of recent discourse on human-environmental relations, we cannot, after all, dispense with the dualism of Culture versus Nature. Not as an *ontological* distinction, because we all know how intertwined they are in the real world, but as an *analytical* one. The symbolic and the material must be kept analytically distinct if we are to understand how they interact in practice.

Human ecology, it has been argued, requires a 'triadic' approach to human-environmental relations that recognizes the recursive relations between the ecological, sociological, and existential dimensions of human life (Hornborg 2000).[2] The point of this perspective is that Nature, Society, and Person are ontologically intertwined but should still be kept analytically distinct. Tim Ingold's comment was that he did not think this would work, as the effect of acknowledging the Person would be to do away with the distinction between Nature and Society (Ingold 2000b:224). This is indeed what Ingold has been suggesting that we do with respect to biology versus culture, and as long as we are talking about ontology and practice, I completely agree. My rejoinder, however, would be that an ontological 'monism' should not imply that we allow all our analytical categories to dissolve. The argument for monism in fact *relies* on those categories. It cannot be judged unreasonable to distinguish between, say, the Second Law of Thermodynamics, the organization of global capitalism, and the human experience of anxiety. As features of Nature, Society, and Person, they are all a part of the same universe and can probably be shown to be interconnected in many ways, but nothing could possibly be gained from not keeping them analytically separate. Precisely in order to be able to show how socio-political relations saturate 'nature,' we must retain our capacity to keep them analytically separate.

To make the epistemological observation, as Ingold (2000a) does, that Culture and Nature are rarely recognized as distinct analytical categories in non-Western societies does not automatically lead to the conclusion that Westerners are mistaken in making this distinction. But in mixing epistemological and ontological arguments (and what were once referred to as 'emic' and 'etic' perspectives) in support of his own theoretical position, Ingold tends to privilege non-European, native perspectives as more adequate not only in their respective, cultural contexts but apparently also at the abstract level of his own discourse. But the question that emerges from this stance is: Are ecological relations (everywhere?) to be

[2] For a model of the 'human ecological triangle,' see Steiner 1993:57.

seen as social relations because this is how the world is perceived by the Ojibwa? Are animals 'persons' even where no humans recognize them as such?

The two points made so far should add up to the simple conclusion that, in trying to account for human behavior, we must acknowledge both the arbitrariness of Culture and the non-arbitrariness of Nature. It should be quite feasible to be a cultural relativist while acknowledging the Second Law of Thermodynamics. The problem that continues to trouble our profession, however, seems to be how to agree on where to draw the line between the symbolic and the natural, and on their relative importance. We shall now discuss two quite different examples of how universalizing approaches have attempted to expand their explanatory potential at the expense of those who seek to acknowledge the semiotic, the arbitrary, and the contingent in human life. The first example is a discussion that engaged several anthropologists more than twenty years ago, regarding how to account for food taboos in Amazonia (Ross 1978; Kensinger & Kracke 1981). The second example is a discussion that is much more widespread and still very much alive, namely the old nature/nurture controversy, particularly with regards to the role of biology and genetics in relation to issues such as gender, social hierarchy, mental illness, and criminality. Although the examples diverge in that the former confronts culture and human ecology, and the latter culture and human biology, the ambition is to draw together these various strands of argument in order to suggest a way of salvaging – against the onslaught of cultural materialists, sociobiologists, and even Tim Ingold – the anthropological notion of culture.

Example 1: Culture and human ecology

More than twenty years ago, the topic of dietary prohibitions or food taboos in Amazonia became the focus of a more general debate that opposed universalist and relativist – or materialist and mentalist – interpretations of human-environmental relations in Amazonia and

elsewhere. On one hand, the approach of cultural ecology characteristically viewed dietary prohibitions as functional adaptations to the constraints of the natural environment, i.e. as pragmatic responses to the imperatives of resource management (Ross 1978). On the other hand, several anthropologists instead argued that the rationale for such prohibitions should be sought not in nature but in culture itself, whether approached from a symbolic, social-structural, or psychological perspective (Kensinger & Kracke 1981). The main point of these studies seems to have been to show that the semiotics of food taboos are more than automatic reflections of the exigencies of the environment, and that the logic of cultural meanings has an autonomy and a specificity that accords with a view of human populations as active and idiosyncratic subjects. Seen in this light, it is obvious that these anthropologists were provoked by the ecologists to do for human populations precisely what Jakob von Uexküll (1982 [1940]) – the founder of ethology and of *ecosemiotics*[3] – and his followers have sought to do for non-human species: to grant them the status of *subjects*. The paradigm of cultural ecology, not to mention the cultural materialism of Marvin Harris (1979), indeed tends to extend the denial of subjective agency from mainstream biology's mechanistic view of ecosystems into human society and culture. An ecosemiotic perspective, on the contrary, would grant human meaning systems the same measure of idiosyncracy as the so-called *Umwelt* (Uexküll 1982 [1940]) of any other species, and perceive ecosystems as the stochastic outcome of the coexistence of a multitude of such subjectivities. 'Co-evolution' is clearly a better word for these processes than the cultural ecologists' notion of 'adaptation,' which conjures the image of a one-way learning process, geared to a static environment and leaving no room for creative, idiosyncratic innovation. Rather than amount to a distinction between

[3] An 'ecosemiotic' perspective views ecosystems as constituted no less by flows of signs than by flows of matter and energy (cf. Hornborg 1996, 2001b). It would thus reject the conventional notion of nature as a primarily material phenomenon, opposed to a notion of society as primarily communicative. Rather, it would view nature and society as interconnected systems, both of which are simultaneously material and communicative.

the autonomous subjectivity of culture and the mechanical pragmatics of nature, humanist arguments can thus be accommodated within a more sensitive, communicative theory of life.

Like other animals, humans are equipped to transmit and receive sensory – i.e. visual, auditory, tactile, olfactory, taste – signals. Such pre- or extra-linguistic sign systems are intrinsically difficult to theorize about, primarily because theory itself is founded in language. Theory can here rarely do more than evoke what remains an infinitely subtle, elusive, and largely unconscious level of human experience. Yet the approach of phenomenology, with its notions of 'dwelling' and 'being-in-the-world,' has been quite successful in helping us acknowledge its importance. This in itself has amounted to a powerful counterpoint to materialist science and Cartesian objectification. Significantly, phenomenological approaches in environmental philosophy (Evernden 1985) and anthropology (Ingold 2000a) tend to emphasize the fundamental, human inclination to experience the natural environment as composed of *subjects* (cf. also Bird-David 1993, 1999).

Throughout the millennia of foraging and subsistence horticulture in Amazonia, a major part of the interaction between human and non-human organisms has been mediated by a myriad sensations of the eye, ear, nose, tongue, and skin, only a fraction of which have been reflected upon and assigned linguistic categories. Such sensory sign flows are what constitute the human embeddedness in the world evoked by phenomenology and the so-called 'practice theory' of Pierre Bourdieu and others. To the extent that people mimetically reproduce and share conventional patterns of emitting and responding to such sensory signals, these patterns are thoroughly cultural. This sensory level of human-environmental relations includes modes of interpreting non-human life forms as well as modes of communicating with them. For instance, Amahuaca hunters in Peru know not only how to glean information from sounds, movements, scents, excrements, tooth marks, tracks, bits of fruit, displaced leaves, broken twigs, etc., but also how to disguise their own colour and scent and to imitate animal

cries and try to get the animals to respond (Carneiro 1974:126-127 [1970]). Hunters among the Achuar of Ecuador similarly use all their senses in interpreting the characteristic signs of different species and are able to 'do a perfect imitation of the distress calls of young or of a female in heat of any species to draw the parents or males within range of the blowgun' (Descola 1994:237).

Though seemingly ephemeral and largely uncodified in language, sensory sign systems are nonetheless potent ingredients in human-environmental relations, capable of inscribing themselves in the landscape. The relation between such local, cultural experience and natural surroundings is clearly co-evolutionary, or recursive, much as any other relation in an ecosystem. Whether deliberately or not, the dietary and other cultural preferences of past generations of Amazonian Indians such as the Ka'apor have left a tangible record in the form, for instance, of old fallows, with a much higher incidence of food species (Balée 1993:245, 1995:106). Referring to Carole Crumley's (1994) definition of 'landscape' as 'the material manifestation of the relation between humans and the environment,' Balée (1995:106) concludes that 'old fallows constitute landscapes per excellence.' The Waorani of the Upper Marañon similarly tend to encourage the occurrence of the *ungurahua* palm (*Jessenia bataua*) and other useful species, while more consciously cultivating the peach palm (*Bactris gasipaes*) and sweet manioc (Rival 1996:238-241). Rival shows that these species are assigned different symbolic values and associated with different kinds of social relations. The peach palms and their fruit are perceived as gifts from deceased relatives and appropriate food for celebrating within the endogamous group, while manioc is used to entertain visitors and potential allies. It is not difficult to imagine the role of such sentiments in generating specific patterns of distribution for different plant species. Although much of this crop symbolism is evidently codified in explicit preferences, it is apparent that the sentiments thus expressed represent a more elusive, sensory level of experience that is transmitted largely through

mimetic practice rather than words. No less than language, however, some aspects of such mimetic practice can represent a *cultural* process that conditions human beings to respond in specific ways to particular signs.

The evidence for cultural idiosyncracy is quite obvious as far as the semiotic logic of food avoidances is concerned (cf. Leach 1964, Tambiah 1969, Sahlins 1976a), but ethnographers may often have underestimated the *political* dimension of such systems of food allocation. Among the Shokleng of Brazil, for instance, food taboos 'far transcend their purely ecological functions' by signalling social status and thus mediating social relations, a phenomenon which can be recognized as belonging to the widespread phenomenon of 'totemism' (Urban 1981). If the specific cultural idiosyncracies of symbolism and taste tend to escape us, it should nonetheless be pertinent to assume that principles for food allocation in indigenous Amazonian societies, as in our own, will be geared to status differentiation based, for instance, on age, gender, kinship, and other determinants of power.

From a psychoanalytic perspective, Kracke (1981) argues that food avoidances among the Kagwahiv can be understood as a symbolic language for articulating and resolving repressed, personal conflicts. The Kagwahiv 'use nature as a rich source of metaphor for depicting emotional states and intimate relationships.' Kracke shows how the domestication of non-human nature with human qualities rebounds into society by offering a code with which to express social relations: 'the plaintive call of the jacamin, the wail of the jogo-jogo, and the more raucous cry of the toucan are identified with a baby's crying, while the tapir is a sexual competitor, the paca self-indulgent, and the agouti and tinamou lazy…' Human qualities are thus projected onto animals prior to their serving as ordering principles for society. Descola's (1992) distinction between 'animism' and 'totemism' should perhaps rather be viewed as a continuous dialectic.

Such recursive processes of meaning transfer are, of course, eminently suitable for semiotic analysis. Urban (1981:86) observes that the purported consequences of transgressing a dietary restriction reveal 'ethnotheoretic notions that can be conveyed only through language,' and that 'turn out to involve an "iconic" (or what used to be called "sympathetic") connection between the species and supposed consequence.' For instance, the Shokleng claim that eating paca or agouti meat would cause the teeth of a child to grow too rapidly, causing toothache. Similarly, the Sanumá on the border between Brazil and Venezuela say that parents eating snake meat may cause their children to have diarrhoea, since snakes have liquid excrement, and that eating sloth meat may cause them to develop a twisted wrist (Taylor 1981:43-44). Kagwahiv maintain that the infant child of a man who kills a curassow (a red-beaked bird) may develop inflammations of the mouth and lips (Kracke 1981:114). Referring to Leach (1964) and Tambiah (1969), Kracke (1981:110) suggests that food prohibitions among the Kagwahiv can be accounted for in terms of the different species' metonymical or metaphorical proximity to humans (e.g., pets are metonymically close, while monkeys are metaphorically so). Following Lévi-Strauss (1966), Descola (1994:211, 1992:114) observes that some animal or plant species are particularly well suited to the role of symbolic signifier because of distinctive, visible features that suggest invisible properties. Thus, dietary prohibitions recognized by the Achuar at the time of planting their gardens function 'as a sign pointing to one of the three categories of attributes detrimental to plants' harmonious growth: things that rot, signified by the *kanka* fish, the *muntish* grub, and by digestion in general; things that burn, signified by peppers and meat exposed to direct contact with fire; things that are slender, signified by monkeys swinging on flexible branches.' Such semiotic transformations are evident not only in food prohibitions, but throughout all the various aspects of indigenous cosmology. For the Campa, whatever is 'excessively thin,' has the 'drab colour of decay,' or 'presents a false appearance' is a demon; thus, *shiénti* (adult ant

lions), *tsiisanti* (drab-coloured hummingbirds), and *shiinti* and *tsináro* (leaf-like katydids) are all demons (Weiss 1974:262 [1972]).

Suffice to say, at this point, that the semiotic logic underlying indigenous Amazonian sentiments regarding plant and animal species cannot be reduced to objective, pragmatic principles that somehow transcend the vagaries of sensory experience and idiosyncracies of symbolic classification. In fact, the claim of some Western observers to have access to these transcendental principles – whether 'adaptation,' 'optimization,' or even 'sustainability' – can in itself be taken as an expression of a particular – and imperialistic – symbolic scheme (cf. Sahlins 1976a; Gudeman 1986). I hasten to add, however, that to say that indigenous cosmologies are not immediately 'adaptive' in a mechanical sense is not to deny that their fundamental, relational mode of human-environmental calibration, in all its attentiveness to the ecological Other, seems singularly attuned to the vital task of *communication* (cf. Ingold 2000a). To acknowledge an ecological sensibility in premodern existence thus does not have to mean reducing hunters and gatherers to mechanical reflections of their habitats.

This leads to a second set of questions prompted by the perspective of Tim Ingold (2000a): How can we acknowledge the significance of shared, semiotic idiosyncracies such as these if we abandon the notion of culture? Ingold's point, inspired by James Gibson, that 'meaning is immanent in the relational contexts of people's practical engagement with their lived-in environments' (Ingold 2000a:168) is a pertinent dismissal of cultural solipsism but hardly of cultural *relativism*, unless, of course, various environmental 'affordances' are taken to somehow determine the specific trajectories of such practical engagement. How can we emphasize the specifics of local, practical engagement and *not* be relativists, unless, in fact, we are environmental determinists? The fact that the communicative relation between person/organism and environment is mutually constitutive, as Ingold has so eloquently

shown, does not detract from the idiosyncratic, arbitrary, and contingent nature of this relation.[4]

Example 2: Culture and human biology

A second example of expansionist universalism are the recurrent attempts to explain a wide range of cultural phenomena in terms either of biological, human universals or of genetic differences. An appropriate point with which to start would be the sociologist Troy Duster's observation that, over the past decades, there has been 'a "drift" toward a greater receptivity to genetic explanations for an increasing variety of human behaviors' (Duster 1996:119). In an earlier study he had found that, in the six-year period from 1976 to 1982, one survey showed 'a 231 percent increase in articles that attempted to explain the genetic basis for crime, mental illness, intelligence, and alcoholism' (ibid.). However, these claims about the explanatory potential of genetics had a rather tenuous relation to scientific advances in molecular genetics. In fact, the majority of the authors of these articles had no credentials in genetics whatsoever. Duster suggests that the increasing emphasis on heritability is related to actual advances in molecular genetics only in that the latter have 'nurtured a climate in which even the weakest "genetic" explanations can take root' (ibid.), and that the real foundation of the increasing frequency of genetic explanations should be approached from the perspective of the sociology of knowledge. A large part of the answer, he suggests, is the driving force provided by contemporary social concerns with '"defects" or problems, such as alcoholism, poor performance in schools, mental illness, and so on' (ibid., 123). The great majority of the authors responsible for the articles referred to above indeed hold medical degrees (ibid., 121).

[4] Perhaps we use the word 'relativism' differently. To the extent that it is taken to denote a readiness to acknowledge the fundamental significance, in all human affairs, of idiosyncratic systems of meaning, then I am prepared to defend relativism. Perhaps, also, we use the word 'culture' differently. 'Culture' to me does not have to mean an essentialized system of knowledge given at the outset, or transmitted independently of its application, but a disposition that is negotiated and largely acquired through mimetic practice, linguistic as well as extra-linguistic.

Although lacking formal credentials in genetics, their profession appears to have predisposed them to make claims about heritability that, as Duster writes, 'exceed those of geneticists themselves' (ibid., 123). He points out that, beyond single gene determinants, the geneticists themselves tend to be cautious of such assertions of '"genetic explanations" of various diseases, illnesses, defects, and social problems' because of the 'broad and often vague definition of the phenomenon, and the not well-understood multifactorial character' of its genesis (ibid., 124). Discussing intelligence and cognitive functioning, Duster even concludes that 'to assign to "genetics" a ballpark figure of any kind,' without regard to interaction between the brain and its environment, 'is to display a profound ignorance of the last three decades of developments in molecular biology and the neurosciences' (ibid., 128).

Duster's argument makes refreshing reading in an age when genetic determinism has seen a noteworthy revival, not only in academic discourse but seemingly in the popular imagination as well. In the following I will present the outlines of some reservations about genetic explanations of human behavior and then move on to indicate some new ways of organizing our thinking about nature/nurture and other dualisms that might help us transcend the simple polarization of biology and culture.[5] The discussion raises some important questions about the delineation of 'biological' explanations, which are often wrongly assumed to imply references to genes and heredity. These questions belong to a wider concern with the ideological and moral dimensions of the discourse on human genetics, which, of course, includes debates relating to recent developments in biomedicine (cf. Hornborg 2002b).

References to genetics can be made to attempt either to delineate human universals – the notion of 'human nature' – or to explain variation between individuals,

[5] I should mention that I have become involved with these concerns in the context of debates with Swedish proponents of biological perspectives on topics such as gender, social hierarchy, mental illness, and criminality (Hornborg 2001b, 2002a; Uddenberg 1998, 2001; Daun 1999, 2002). It should be noted that neither of my opponents in this debate is a geneticist; in fact, neither of them is even a biologist.

groups, or social categories. The former project is ideologically less controversial but frequently appears in conjunction with more or less explicit versions of the latter. Thus, for example, two prominent Swedish protagonists of sociobiology – the medical doctor Nils Uddenberg (1998) and the ethnologist Åke Daun (1999) – both profess primarily to be interested in pursuing universals, yet the thrust of their arguments is such that their readers are urged to attribute greater weight to the role of genetics in explaining *variation* in personality, intelligence, aggressiveness, etc. Uddenberg (1998) thus devotes one chapter to arguing that the notion of socio-culturally constructed gender is scientifically untenable, and to proposing instead that various statistical, social differences between the sexes, such as in power and income, have their foundation in genetic differences. Although the intention here would seem to be to emphasize gender differences as a universal, i.e. across cultures, the effect is to let individual men and women know that their different social conditions – including average income – can be attributed to their genes. Alongside issues such as 'intelligence' and 'race,' gender is obviously one of those domains where we have reason to be wary of paradigms that present relations of power and inequality as 'natural.'

Whether trying to explain universals or variation in human behavior, references to genetics are of very limited help. The search for universals inevitably results in abstractions far removed from the cultural specificities and personal idiosyncracies that shape the way that human beings actually conduct their everyday lives. If, as Sahlins (1976a, 1976b) has shown, all human behavior is to some extent mediated by idiosyncracies of meaning, there can be no such thing as a purely biologically motivated act that can be exhaustively accounted for by reference to the biological or neurophysiological constitution of human organisms. Nor, as Ingold (2000a) has shown, can the biological and neurophysiological constitution of organisms be exhaustively accounted for by reference to their genes, as 'genotypes' exist only as abstractions from ontogenetic processes that from the very outset are interactive, relational,

and situated in specific environments. References to genetics and even to biology in explanations of human behavior thus necessarily strip away the contextual details that would be crucial for a full account. Attempts to weigh the genetic or biological versus the cultural or biographical, as in the assertion that between 30 and 50 percent of human personality is 'inherited' (Daun 2002, ref. to Plomin *et al.* 1990), seem logically misguided, since the relation between the two kinds of factors is not one of contradiction or competition but a relation of form to substance, that is, between different levels of abstraction.

To take a very simple example, how would one quantify – in terms of percentages – our biological drive to eat in relation to a cultural preference for herring, pork chops, or spaghetti? At the empirical level represented by actual eating, human behavior is always deeply embedded in the specificities of culture. At an abstract level, the ingestion of nutrients is 100 percent biological, but at the concrete level of participating in a Swedish crayfish party, it is 100 percent cultural. A genetic explanation can only be expressed in terms of abstractions and universals, but there simply does not exist any human behavior that occurs in such an abstract, universal form. In empirical reality all human behavior is molded by culture. Unless modified in the direction suggested by Ingold (see below), references to biology cannot explain its specific substance. In conventional usage, biology is to the social sciences as abstract to concrete, general to specific, genotype to phenotype, form to substance. The relation between biological sex and socio-cultural gender, mentioned above, is a good example.

This relation between biology and the social sciences is reminiscent of the polarization, within the field of economic anthropology in the 1960's, between formalists and substantivists. The distinction between formal and substantive aspects of economic behavior was made by the economic historian Karl Polanyi (1957), following Max Weber's distinction between formal and substantive rationality. A formal definition of economic behavior focuses

on abstract, universal aspects such as choices between scarce resources, calculation of means and ends, and the proclivity to maximize. Formalists argued that such abstract models can be applied to economic behavior irrespective of cultural context. A substantive definition of economy, on the other hand, focuses on the specific ways in which people relate to the material world: the cultural content of economic processes at the level of specific value systems, institutions, and technologies. Formalists and substantivists thus pursue two very different kinds of explanations, the former seeking to distill universal forms of rationality disembedded from cultural context, while the latter aspire to work out in detail the particular conditions under which choices are actually made. Formalist abstractions are not incorrect, but the question is how useful they are in accounting for actual behavior. In retreating from the empirical actualities into abstract models, they tend to provide less information of the kind needed to understand as fully as possible the processes which shape human action. There is even a risk that formalists reduce their abstract forms of understanding into tautology, as in the underlying assumption of neoclassical economic theory that consumers find commodities useful because of their 'utility.' Nothing is thereby said about the substantive choices that people actually make, or about the specific symbolic systems that define what to actual people is useful or valuable (Sahlins 1976a).

This explanatory vacuity of formalism in economic theory is very similar to the vacuity of references to human universals. One of my Swedish discussion partners (Daun 1999) has rather uncritically subscribed to the list of 'universal human needs,' purportedly established as given by our evolutionary history, that was assembled by Henry Murray (1962 [1938]) in the 1930's. To an anthropologist, this list says more about the American middle class in the 1930's than about universal human nature. Even if these abstractions were actually to represent something universal, they are of little help to social scientists, who are primarily interested in understanding human variation, since variation cannot be explained by

reference to a constant. If, for instance, our universal 'need for self-esteem' can incite us to murder or join the army just as well as to study medicine or refuse the draft, Murray's universals could not possibly contribute very much to social science. Concisely expressed, that which is universally human could probably be summarized on a single page. The struggles of anthropologist Donald E. Brown (1991) to list human universals resulted in ten pages. The question is what social scientists are expected to do with these lists? Should we from now on begin every text we write with a standardized footnote reminding ourselves and our readers that all that we are about to describe presupposes biological organisms with the properties listed by Brown (1991:130-140)?

It is no coincidence that it was Marshall Sahlins – a leading substantivist – who delivered one of the most trenchant criticisms of Edward Wilson's influential book *Sociobiology: The New Synthesis* (1975), only a year after its publication. Sahlins' response, titled *The Use and Abuse of Biology* (1976b), almost thirty years ago emphasized the major oversight that continues to pervade biological or genetic explanations of human behavior today, namely that *there is no necessary connection between cultural content and individual motivation*. A specific kind of behavior can express very different kinds of individual motives. A gift can actually be a way of expressing aggression, whereas war does not necessarily have to be. This is undoubtedly an important objection to any attempt to reduce specific patterns of behavior to biological or genetic constitution.

This objection is as valid whether the attempt is to identify genetic universals or to explain variation in behavior as the result of genetic variation. In the latter case, it is simply unfeasible to isolate and extricate – not to mention quantify – genetic factors vis-à-vis the obvious and incredibly complex influence of culture, class, and personal biography. There is no solid ground for claiming that personality or temperament can be measurably determined by our genes, not even if we are literally born with it. Already at birth we have lived in,

experienced, and been molded by, our environment for nine whole months, a period in life when we have been maximally malleable and susceptible to fundamental impressions being inscribed in our emergent personalities. Already in the womb, culture, class, and personal circumstances have invaded our souls and begun to influence our temperaments. For this reason, it is hard to be persuaded by studies of twins that purportedly establish genetic foundations for specific personality traits. After all, twins will always have had this crucial, pre-natal environmental component in common: their mother's body, suspended in a specific web of social relations and inclined to respond to these relations according to a specific cultural and personal repertoire. This all-encompassing metabolism surrounding human beings during the nine most formative months of their life obviously has a biochemical dimension, but this biochemistry is largely a reflection and translation of larger fields of social interaction, rather than the simple unfolding of a genetic script. How could any genetic investigation even theoretically peel off these circumstances so as to isolate an imagined, pure genotype? If we recognize that environmental influences begin at the very moment of conception, our categories distinguishing what is innate (what we are born with?) versus the result of a shared environment become blurred. [6]

Another but convergent perspective on the debate on 'genetic explanation' could be couched in a humanist framework of reflexive epistemology. At issue is our choice of language: whether we approach human beings as objects or subjects. We can either talk about their biology, hormones, genes and instincts, or about their meanings, emotions and experiences. Both narratives hold a measure of truth in the sense that they may *work* as maps for effective therapy. Anxiety and aggression, for instance, are simultaneously biochemical and subjective conditions, which can be alleviated either with drugs or psychotherapy. But beyond the pragmatics of solving problems as efficiently and inexpensively as possible, we

[6] An additional consideration, of course, is that the notion of a 'shared environment' in the form of a common family or home obscures the fact that it will provide quite different niches for differently positioned siblings.

should ask which *explanation* is the most exhaustive: references to the patient's biochemistry or to the system of social relations of which it is an expression? The psychiatrist and anthropologist Robert Levy (1992:220) noted that for the medically oriented, a blood sample indicating depression would be perceived not as an expression of a fundamentally social condition, but as something approaching its very essence. The difference here between a biomedical and, for instance, a psychoanalytic approach illustrates the difference between what Paul Weiss (1972 [1969]) long ago referred to as *microdeterminacy* versus *macrodeterminacy*. The former is the inclination to explain phenomena by referring to their component subsystems, while the latter – generally associated with the social sciences – means referring to the wider relations and contexts of which they are a part. The ideal, of course, would be to reckon with a continuous recursivity, or feedback, between the micro-level and the macro-level (cf. Rose *et al.* 1984; Steiner 1993:52), which in the case of human behavior would mean between the organic and the social.

The choice between approaching humans as objects or subjects can also be illuminated by comparative ethnography. Eduardo Viveiros de Castro (1999) has observed that Europeans and Amazonian Indians typically have diametrically opposite images of living beings: Europeans imagine that even humans deep inside are animals, whereas the Indians assert that even animals deep inside are humans. If we replace the word 'animal' with 'object' and the word 'human' with 'subject,' we have yet another reminder of that special, Western legacy that we refer to as Cartesian dualism.

Tim Ingold has been particularly preoccupied with challenging and transcending such Cartesian dualism. His recent book *The Perception of the Environment* (2000a) stimulates us to rethink the very categories through which we filter our habitual understanding of the nature/nurture controversy. The emphasis throughout the book is on transcending modern dichotomies such as mind vs. body and culture vs. nature and demonstrating how

such dualist thinking organizes even our conventional distinction between cultural and biological aspects. For many anthropologists, Ingold's deconstruction of this latter dichotomy would probably be most difficult to digest, if the outcome did not suggest a humanization of nature just as much as a naturalization of culture. The uniqueness of his synthesis is perhaps highlighted by its capacity to weld together perspectives from the phenomenology of Merleau-Ponty and Heidegger with biologists' considerations of the development and constitution of organisms. On closer scrutiny, his hesitation about the notion of culture seems to resonate quite well with much contemporary anthropology, being primarily directed at the idea of *a body of knowledge transmitted independently of its application*.

Challenging essentializing and decontextualizing notions of abstract, cultural *and* biological inheritance, Ingold argues that humans are constituted – as indissolubly persons *and* organisms – through practical enskilment and engagement in specific environments. He consistently dismisses notions of factors given at the outset of such developmental processes, whether cultural or biological. An interesting aspect of Ingold's argument is thus that it suggests a wider and more dynamic notion of biology than that evoked by the old nature/nurture controversy. 'Biology' for Ingold has very little to do with heredity, standing instead, it seems, for the 'organic' that has so long been ontologically distinguished from the 'subjective.' His target of criticism is the kind of ontological dualism that in our world view maintains such a rift between the subjective and the organic and that simultaneously makes it into a difference between humans and animals. Ingold's aim in bringing biology and culture together is not to champion the importance of either genotype or culture – both of which he dismisses as abstractions – but to transcend the Cartesian distinction between body and mind. Thus, biology to Ingold does not represent the abstract and the universal, as in the conventional debate, but the very specific developmental processes that organisms undergo in particular environments.

The only objection that needs to be raised with regards to this position, as previously indicated, is that Ingold really would not need to throw the baby ('culture') out with the bathwater. We still need to be able to distinguish *analytically* between those aspects of our bodies-and-minds that can only be explained with reference to symbolic, social processes, on the one hand, and those aspects that do not require such semiotic considerations, on the other. A final question to Ingold would thus be: Do we not, after all, need to distinguish between those aspects of 'relational-ecological-developmental' processes that depend on the mediation of *symbols*, and those aspects that do not?

Conclusions: Three intersecting dualisms

On closer scrutiny of the issues raised above, the Nature/Culture distinction requires not dismantling, but reconstitution. There are in fact no less than three different dualisms at stake, that in various contexts have been conflated into a single, 'Cartesian' dichotomy. The biology-versus-culture distinction should be defined neither in terms of genetics-versus-environment (as is the convention), nor in terms of body-versus-mind (as does Ingold), but more precisely in terms of *the pre-symbolic versus the symbolic***.** These three analytical polarities – genes/environment, body/mind, and biology/culture (thus defined) – overlap only partially and need to be distinguished from each other. Instead of a simple dichotomy of organic versus supra-organic, we need to recognize the lived worlds of human beings as analytically transected by three dimensions, producing no less than *six* distinguishable domains, the study of which each requires a specific mix of methodological tools (Figure 1).

These dimensions are: (a) the genetic versus the environmental, (b) the objective versus the subjective, and (c) the pre-symbolic versus the symbolic. On one hand, there are aspects of our being that can be objectively monitored and that can be derived, respectively, from genetic inheritance (such as the structure of our skeleton), somatic adaptation (for

instance, to high altitude environments), or cultural systems (such as diet, profession, habits, or aesthetic notions of the ideal body). On the other hand, there are aspects of our subjective being which are, respectively, genetically inherited (such as the experience of hunger), organically acquired (such as the non-semiotic aspects of Ingold's notion of 'skill'), or culturally transmitted (such as values, or world view). In other words, both the objective and subjective dimensions of our existence can be subdivided into aspects that are (a) hereditary and pre-symbolic, (b) environmental and pre-symbolic, or (c) environmental and symbolic.

The subjective dimension of human existence cannot be derived from the organic without being trivialized, and thus requires a language of its own that is sensitive to the symbolic and the experiential. Neurophysiologists cannot account for the cultural content of human behavior. Even if we recognize the mutual interpenetration of biology and culture, the analytical distinction between them must be maintained, since significant aspects of human activity cannot be understood except through semiotic perspectives that biology is not equipped to handle. The gist of these perspectives is to emphasize the fundamental arbitrariness of culture, i.e. the extent to which everything relating to humans *could have been otherwise*. To return to Troy Duster's observations, it is possible that many of the people who tend to resort to 'genetic explanations' do so because they find this arbitrariness difficult to deal with. It is important to recognize that this symbolic domain is not confined to the subjective, as the semiotics of social relations can be shown to intervene in very tangible ways in our organisms. This is particularly evident in the case of those '"defects" or problems' (Duster 1996:123) that many people e.g. in the medical profession would rather relegate to the morally less troubling causality of 'genetic explanations.'

Nor, for the same reasons, can the complex idiosyncracies of human-environmental relations be derived from some universal, material rationality like 'adaptation' or 'optimal foraging.' The largely arbitrary semiotics of symbolic systems permeate our

landscapes as well as our bodies. Ecosystems, too, have aspects that are irreducibly cultural. Parallel arguments can thus be made for the acknowledgement of culture itself as an organizing factor in both human ecology and human biology. This requires recognition of the uniqueness of *symbols* as defined by C.S. Peirce. The unpredictable character of symbolic systems makes them inherently inadequate as vehicles for any kind of universal, material rationality. Ubiquitously, however, they are vehicles of *power* (see Leatherman & Thomas 2001 for several illustrative examples at the interface of human ecology and human biology[7]).

This, finally, is what the two very different discussions above have in common. In both cases, attempts have been made to exclude the symbolic or cultural dimension from explanations of human behavior, in the former case by arguing that it is macro-determined by ecosystems, in the latter case that it is micro-determined by genes. Tim Ingold's 'relational-ecological-developmental' approach is highly useful in countering both kinds of reductionism, in the first case by emphasizing the *mutuality* of the relation between person/organism and environment, in the second case by dismissing the notion of a *given* genetic constitution. It needs to be complemented, however, (a) with an explicit discussion of the role of the symbolic – and thus of the scope of contingency and arbitrariness – in human life and behavior, and (b) with an attention to the political dimensions of both human ecology and human biology. The question that lingers on is if this approach can really afford to abandon analytical tools such as 'culture' and the 'symbolic,' or if they in fact should be seen as necessary to it. Whether our goal is to understand the specifics of subsistence practices in native Amazonia or the construction of gender in contemporary Europe, the conclusion here is that we simply cannot do without them.

[7] Leatherman & Thomas (2001) mention, for instance, Mintz' (1985) classic observations on how poverty and malnutrition in the Caribbean have been linked to changing tastes for sugar in England, the effects of tourism on nutrition and health in modern Yucatán, and Schell's (1997) discovery that African American children in the U.S. are eight times more likely to have elevated levels of lead in their blood than white children.

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OBJECTIVE-SYMBOLIC E.g. bodily consequences of diet, profession, habits, aesthetic ideals.	*SUBJECTIVE-SYMBOLIC* E.g. values, world view.
OBJECTIVE-ENVIRONMENTAL E.g. somatic adaptation to high altitude.	*SUBJECTIVE-ENVIRONMENTAL* E.g. skill.
OBJECTIVE-GENETIC E.g. blood type.	*SUBJECTIVE-GENETIC* E.g. hunger.

Figure 1. Examples of six aspects of human existence generated by the three dimensions genetic/environmental, objective/subjective, and pre-symbolic/symbolic.

All boxes not labeled genetic signify environmental influence, while all boxes not labeled symbolic (i.e., cultural) represent pre-symbolic (i.e., biological) aspects. Note that there are biological aspects that are not genetic, and environmental aspects that are not cultural.