Terra Sapiens. *How Landscape Invented Man*

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Abstract: By proposing an extended use of the term *Folkecology* to designate the ecological knowledge and competences among the hunter-gatherers and in some traditional societies, this essay poses the methodological basis to create a landscape model of the human mind and cognitive processes.

1. *Present Pleistocene*

The idea of landscape was not born with Petrarch on Mount Ventoux or during the Renaissance with Flemish painters, just as Henry Ford and Armand Peugeot did not invent the wheel. Landscape as a symbolic form is, rather, an innate way of thinking, an intertwining of cerebral and cognitive structures shaped over the course of hundreds of millennia by the sensory experiences of hominids and *Homo sapiens sapiens* in their respective ecosystems. Some researchers prefer in this case to talk about *proto-landscape* (Berque 1995), or simply *environment*, *territory* or *ecosystem*, reserving the term *landscape* for the intentional and strictly cultural prerogative that characterizes the human-nature relationship. But to avoid from the outset the "false opposition between nature and culture, source of pernicious misunderstandings", it must be observed that "the difference between transformed objective reality [culture] and untransformed objective reality [nature] is debatable; even untransformed objective reality, insofar as it is experienced, thus represented, is the product of a transformation" (Buttitta 1996: 16). In other words, when perceived by humans, the land is already a representation, and moving from synchrony to diachrony, we can assert that the idea of landscape has existed at least since *Homo sapiens sapiens* made his appearance.

To neglect this long-term perspective in a discussion about landscape would be to misunderstand the fundamental phenomena that control our way of relating to the environment. Paleoecology, geology, primatology, physical anthropology, sociobiology, cognitive ecology, paleoethnology, comparative ethnology and ethnolinguistics all help us to reconstruct the historical context (phylogenetic, ontogenetic and cultural) of the co-evolution of humans and the environment. The idea is to look for the biological and cultural background in every statement about the environment, because reconstructing our ecological prehistory means understanding that modern man, before a panorama, is not only a *Homo aestheticus* of refined intellectual options, but also the unknowing heir to a wealth of innate cognitive structures that date back to the Pleistocene, and that show vital traces of the neurophysiological and symbolic particularities of the

Paleolithic hunter-gatherers. This idea has already been well developed by Paul Shepard (1998) in his book *The Tender Carnivore and the Sacred Game*, the text that inspired our research and whose ideas we would like to explore in connection with more recent studies, such as those by Steven Mithen (1996, 1998, 2006) or David Lewis-Williams (2002) on the origins of the mind, or with more classical studies which merit a re-reading from a "landscape" point of view, such as those on the "savage mind" (Lévi-Strauss 1962), the "pattern which connects" (Bateson 1979) or the "rhizome" (Deleuze-Guattari 1980). The aim is to delineate an anthropological model in which the concept of landscape is no longer the historical by-product of a given culture, but rather the trace of a trans-historic and universal cultural paradigm which, rooted in our biology and our cognitive structures, continues to cyclically and locally emerge, helping us to process complex realities.

2. *When hominids and* Homo *thought about the earth*

Evoking *Ardipithecus kadabba* (6 m.y.a.) or *Australopithecus afarensis* (4-2.5 m.y.a.) in a discussion about landscape makes sense for at least two reasons: on the one hand, we are given to considering as an appanage of humankind a whole series of faculties whose biological roots are in fact much more ancient; on the other, our cognitive system was formed over the course of millions of years of evolution in response to an ecosystem and to living conditions that no longer exist. Even when we design the latest microchip we are using cognitive tools originally developed for solving different problems, such as distinguishing a predator among nocturnal shadows (perception-representation), following the tracks of an animal (induction-abstraction), or organizing a group hunt (prediction-deduction). Shepard maintains in particular that the link between humans of 40,000 years ago and contemporary humans is the biology that they share, but this common biology is not only anatomical and physiological, but also neurophysiological and behavioral: the primary mental structures are the same as 40,000 years ago, and even though a few millennia of urban history have led humans to invent innumerable social, ideological and cosmological models, the *need* for a social structure based on an ideology and a cosmology is the product of a genetic heritage shaped in the Pleistocene.

It was, in fact, during this period that the principal human physical characteristics (size, anatomy, metabolism, sexual dimorphism and behavior, brain size, neoteny, etc.) developed in connection with social, ecological and technological factors: our body and our mind were formed in a world of hunter-gatherers. To a few dozen centuries of official history, we must compare two million years in which *Homo* lived hunting and gathering, two million years in which the ecosystem genetically determined our physical and mental structures and, through selective pressures, reinforced and specialized our innate behaviors. The eye, for example, which has a particularly acute connection with the environment (and which has a 70 million year history), was formed in an arboreal context where the verticality of the trunks and the horizontality of the branches

and the ground were the dominant coordinates of perception and ambulation for the prosimians. Shepard says:

> Perhaps our esthetic feeling for symmetry and balance, our inclination to abstract the vertical and horizontal lines and to follow them with our eyes, belongs to the following of trunks and limbs, first with bodies and then by sitting and looking (Shepard 2002: 5).

According to Steven Mithen (1996), *Australopithecus* (from 4.5 m.y.a), *Homo habilis* (2 m.y.a.) and *Homo erectus* (1.8 m.y.a) already possessed a social intelligence, that is, cognitive processes specialized for group strategies, and could rely on specific cognitive modules for foraging and memorizing the spatial distribution of resources (which Mithen calls "natural history intelligence" and which we suggest calling "ecological intelligence"). Such types of specialized intelligence were perhaps connected with social intelligence used for creating group strategies aimed at sustenance. In the case of *Homo*, the first evidence of stone tools points to a true technical intelligence because he was capable of selectively recognizing the acute angles in a stone nodule, he had perfect hand-eye coordination and he knew how to calibrate exactly the force and the direction of a strike. Mithen asserts:

> Both the production of stone tools and the regular exploitation of animal carcasses are likely to have required specialized cognitive processes of a type absent from the chimpanzee mind. *H. habilis* appears to have been able to understand the fracture dynamics of stone and to have constructed hypotheses about resource distributions (Mithen 1996: 112).

As for the intelligence of *Homo sapiens sapiens*, Mithen observes that the leap, even before the advent of language, is to be attributed to the cognitive fluidity between the social, technical and ecological modules, which led to the development of complex mental strategies. In juxtaposition to this "cathedral model" (where each specialized module is a "chapel" connected to the "nave" of general intelligence), we would like to suggest a "landscape model".

3. Folkecology *and the "landscape mind"*

The term "folkecology", used in a restrictive fashion to define "how people understand and utilize interactions between plants, animals, and humans" (Atran et al. 1999: 7598), can be used in a global sense to define what we called ecological intelligence, or a dynamic intertwining of various naturalistic skills. Not so long ago (and still today in certain cultures), knowing how to read the landscape was a matter of life and death: knowledge of the land, edible species, the behavior of game, seasonal changes, in short the thousands of ecological signs that saturate the environment, was vital for humans whose survival depended solely on their own aptitude. Ethnobiology and folkbiology study the ways of conceptualizing, classifying and organizing zoological and botanical knowledge in a given culture (Ellen 2006b; Atran, Medin 1999, 2008). Nevertheless, beyond plant and animal competence, we must contemplate the no less vital expertise that

human societies may have developed in regard to the inanimate parts of the land (Sillitoe 1996), such as the *shapes*, *dynamics*, and *physical components* (water, minerals, soils) of the landscape, and which we could name as a whole "folkgeology". Every human society, thus, has developed a personal reading of its own ecosystem and, cultural diversity notwithstanding, it is possible to hypothesize a common genetic background: perhaps these are innate conceptual forms, the fruit of an environmental selection that is expressed with cultural variations in every society, and which functions as a powerful inductive filter for interpreting nature (Atran 1990; Ellen 2006a). The study of childhood and adolescence among modern hunter-gatherers has shown, among other things, that the long ecological apprenticeship of an individual, as well as including lists of plants and animals (and their taxonomic organization), always unfolds in a specific place: landscape on the whole is a playground that serves as a schematic model for technical, linguistic and social intelligence (Hewlett-Lamb 2005).

Is it therefore possible to hypothesize a "cognitive landscape", that is, a neuro-cultural structure modeled on the ecosystem and its spatial and dynamic qualities? If in western society the model of the mind seems to imitate urban structure (it is no coincidence that Mithen uses the metaphor of the cathedral), in hunting-gathering societies the landscape model is evident. Take for example "sacred ecology", or the development of ritual and mythical structures that guarantee and perpetuate behaviors intended for a sustainable use of natural resources (Berkes 1999; Menzies 2006; Harkin, Rich Lewis 2007). Or consider the elaborate eco-ideological systems among the Koyukon of Alaska:

> Human behavior toward natural entities is governed by spiritually based rules. Hundreds of such rules have been transmitted through Koyukon tradition, affecting the entire range of human interactions with nature. Their basic purpose is to show respect, or avoid disrespect, for all natural entities, in accordance with a code of etiquette and morality (Nelson 1983: 229).

And Shepard observes:

> For hunting-gathering people the natural environment is firm. The kin structure is stable because the individual is born or initiated into a group as durable as the plant or animal species taken by it as a totemic emblem (Shepard 1998: 132).

Even society, therefore, can be thought of and organized in terms of the ecosystem, while the construction itself of the sacred has been predetermined by innate systems of knowledge and environmental mapping. Natural religion—meaning fundamental, common modes of turning to the supernatural—does not develop in a vacuum, but rather through adaptation to a specific landscape (Burkert 1996).

But consider also the eloquent phenomenon by which space, territory and landscape are incorporated into linguistic structures: "space must have been a theme of capital importance in Paleolithic hunting-gathering cultures, as the analogy with historically known societies of hunter-gatherers would at least seem to suggest" (Ballester 2006a: 23). This is the case, for example, in the apache language, in which place-names not only procure a descriptive hypostasis of the site, but also "implicitly identify positions for *viewing* these locations: optimal

vantage points, so to speak, from which the sites can be observed, clearly and unmistakably, just as their names depict them" (Basso 1996: 89). Or take the case of the Inuit language:

> The dynamic of the space-time relationship appears at the very *foundation* of the *elementary* and *conceptual structuring* of the Inuit language of eastern Greenland. In other words, the spatial and temporal imprint is not limited to the specific area of deictics, nor to that of morphemes of the verbal aspect linked to action, but it spreads *across* the entire language. It is, therefore, the spatial-temporal perception of reality that structures knowledge (Tersis 1996: 75).

In this sense ethnolinguistics is an indispensable tool for gathering universal and particular features of the cognitive processes of various human societies**,** or for reconstructing those of peoples whose ethnological context has been lost. One of the most relevant examples is given by the *Paleolithic Continuity Theory* (Alinei 1996-2000), whose systematic application in the field of linguistic anthropology (Costa 2007a) has enabled us to reconstruct certain cognitive processes that would have otherwise been unattainable, such as the system of taxonomic and ideological classification of plants and animals in prehistoric Europe (Ballester 2006b) or the recognition of shamanic modes of perception in ancient and medieval European literature (Benozzo 2007a).

4. *Mapping the "landscape mind"*

In this project of wide scope in both time (geological, evolutionistic, paleolinguistic, paleoethnological) and space (geographical, biological, ethnolinguistic, ethnographic), the possibilities for more detailed research are many. However, there are a few areas that we feel beg further investigation: paleoanthropology and primatology, to study the cognitive evolution that led to the formation of spatial skills (way-finding, mapping, topological thought, intuitive geometry) in *Homo sapiens sapiens*; cynegetic phenomenology (i.e. hunting and predation as a cognitive model), examining in particular the metaphorical-metonymical connection between animal anatomy, earth anatomy and social anatomy; "folkgeology", or the inductive sciences of the Earth in traditional societies; "sacred ecology", and the numerous ethnographic examples that describe the material and symbolic management of land; the language-landscape connection, analyzing in detail the way in which geographical features are imprinted on linguistic structures; prehistoric rock art, for cognitive models that underlie the spatial representation of the animals depicted as much as the representation of space obtained *through* them; the landscape roots of religious behavior, along with what Bradley defines as the "archeology of natural places" (Bradley 2000). As an example, we would like to examine in greater detail three of these possibilities.

1) It has been observed that certain primates can follow a bird in flight to find food sources, and various studies have demonstrated that many species of monkeys and apes are capable of constructing mental maps of a given territory,

thanks to an elaborate spatial memory and to predictive and decision-making processes honed for solving problems of foraging and orientation (Strier 2007). On the human side, there exist numerous ethnographic examples in which the geographical skills of way-finding and mapping seem to exceed western cognitive capabilities (Conkey 1984; Morphy 1991; Zvelebil 1997; Nazarea 1999; Nabokov 2006). Certain collections of maps drawn by the Inuits, for example, illustrate a capacity for a particularly detailed mental representation of the land. This inductive cartography originates from hunters' extreme frequentation of the territory: ecological knowledge of place, solicited by the presence or the lack of food sources (fishing zones, caribou crossings, etc.), produces mental maps in which the abundance or the scarcity of food determines sensitive alterations of scale in the drawing. However, "the enlargement of the hunting domain seems to spring from the draughtsman's acquaintance with these areas, rather than from any deliberate attempt to invoke sympathetic magic" (Spink, Moodie 1972: 19). This complex geographical knowledge is the result of a combination of many factors:

> At the crossroads of cynegetic experience and oral tradition, its existence does not depend on the development of a particular knowledge but on an organized structure of its own knowledge. The geographical objects are gathered using operative categories that form a grid which conditions the perception of geographical space as a whole, and which expresses, beyond a geographical knowledge, a "wisdom of the land" (Collignon 1996: 149).

Between the example of the primates and that of the Inuits (two apparently unrelated cognitive systems analyzed from a synchronic point of view), it may be interesting to examine the diachronic-evolutionary dimension, analyzing the spatial behavior of the hominids. Studying the variability and spatial density of the rare archeological evidence left by early *Homo* (in this particular case animal remains and stone tools), it is possible to formulate a few hypotheses on the connection between spatial strategies of sustenance and cognitive structures. In particular it has been observed that, despite the lack of true base camps, there existed places that were repeatedly exploited in a rotating system of foraging (Lake 1998). We do not have at our disposal the evidence to state whether this behavior was a result of a mere physiological predisposition or of an authentic psychological creativity, but in either case we can recognize a spatial conceptuality at work, which presupposes cognitive faculties superior to those of an ape.

2) What links the body of an animal dissected by the blade of an ancient hunter, the body of that same animal depicted on the walls of a cave more than 30,000 years ago, the body of the hunter, who knows how to kill, paint and tell about the animal, the hollow body of the cave, full of signs, images and narrations, the enlarged body of a group of men, women and children, and finally the body of the Earth, which encompasses bodies animate and inanimate, human and non-human, material and immaterial, individual and social? The Scandinavian myth of the giant Ymir, from whose decomposing body the Earth was formed, or Leonardo da Vinci's proto-geology, which represents the world in

terms of terrestrial physiology, the slogan of the geographer Elisée Reclus, for whom "Man is Nature that becomes aware of itself" (Reclus 1905-1908: vol. I, 1), or James Lovelock's Gaia theory (1988), according to which the Earth is a living system capable of self-regulating like a unique planetary organism, are all examples of how the metaphorical confusion between biological body and geological body opens a whole range of heuristic possibilities that are more or less fertile, more or less convincing.

Is it a matter, however, of cultural and polygenetic invention, or is it, rather, an innate cognitive model whose roots extend into human prehistory? A little-known study on the acquisition of anatomical knowledge by ancient man suggested to Shepard the idea that animal anatomy was one of the first complex models for interpreting the world:

> Indeed, the interiors of animals are wonderful, uncanny landscapes, new regions as surely as the mountains and valleys beyond the horizon. "As man learned to learn," says Laughlin in the book *Social Life of Early Man*, "he was learning anatomy. The early apprehension of anatomical form and function served to configure ancient man's perception of the world. Anatomical form remains a salient organizing system even in cultural categorizations that have little or no apparent connection with anatomy. The organization of the mammalian body provides a basis for intellectual organization, and anatomical analogies and reasoning are found in all cultures" (Shepard 1998: 193).

Thus, it would seem that anatomical knowledge is a yet another competence to be inserted into the complex framework of folkecology.

3) Biosemiotics maintains that all living beings, from bacteria to humans, utilize organized systems of signs to communicate (Sebeok, Umiker-Sebeok 1992; Barbieri 2006). This communication is usually species-specific, that is, the message has meaning only among animals of the same species, but there are also involuntary signals that cross the boundaries of a single species: a herd of animals in a compact group or in dispersed order mean two entirely different things for the leopard that is preparing to hunt them. These messages can also come from the inanimate world: the spatial configuration of land (colors, shapes, lines) may signify nothing for a herd of caribou but, seen from above, can guide the migration of a flock of wild geese. In this natural semioshpere, humans and animals learn to communicate *with* and *through* the environment which, depending on the case, performs the functions of sender, message, channel and context.

This hypersemiotic dimension of the landscape appears to be connected to a neurophysiological faculty of humans: the lack of blood that is observed through magnetic resonance imaging in the brain of a person who is asked to read demonstrates that there is a cerebral area (the left visual ventral region) that is activated during the recognition of the written word. Clearly this area did not evolve in conjunction with writing, but already existed well before and has simply been reused for reading signs. It is, in fact, the same area that, before the existence of writing, was used (and is still used today) in the recognition of faces, objects and places, responding to a principle of invariance that omits accidental, superfluous elements (Dehaene 2003). When we look at someone's face, we do

not see a mosaic of physiognomic features but rather a unified whole; looking at a place we do not see a sum of topographical features but a landscape. The repetitiveness of the morphological features of a landscape (infinite variations of finite typologies) gives the impression of a recurrence of forms beyond the dimension, shape and position of the objects. The omnipresence of writing in the modern age leads us to read meaning into the shapes that we learn to repeat or that we see repeated, but this inclination is reinforced by an innate tendency that is much more ancient: we expect meaning every time we recognize recurrence, correspondence or repeated forms, and we translate shape into sign at every possible opportunity. The idea that landscape can be read, which is not only metaphorical, seems to have biological roots, probably because a morphological reading of the spatial configuration of the landscape and the ability to recognize recurrent types of landscape were indispensable tools of orientation in places that were unknown but somehow familiar. The innate neurophysiological matrix seems to be supported by the fact that, in much the same way that every member of the species has the tendency to recognize images in random shapes such as clouds or ink spots, we can perceive familiarity in a never before seen landscape.

5. *For a landscape-based anthropology*

Many ideas on landscape that we believe to be modern and western are nothing more than recent reinterpretations of an older and more complex biological-cultural framework: the tendency to interpret the world according to models derived from our experience of the body, the environment and the society in which we live has its origins in the very origins of the species, that is, in a time in which our physiology and our intellectual faculties were modeled by natural selection and environmental pressures. Thinking of the world as an organism or as "a system in which everything holds together" (Saussure 1916) is not an intellectual discovery of nineteenth century Organicism or of twentieth century Structuralism. Rather, we must accept the idea that Organicism and Structuralism are the recent and conscious formalizations (*parole*) of an underlying and unconscious cognitive system (*langue*). The real question, then, is to understand how, when and why this system of reading reality as landscape was developed in *Homo sapiens sapiens*, and at the same time, to isolate the unifying tendencies and factors in the cultural diversification that characterizes the relationship between humans and nature.

In order to do this, we must develop a "landscape-based anthropology" (Haenn, Wilk 2006), or in the global meaning that we have suggested, a folkecology. The idea is to analyze basic facts (body, environment, language) of prehistoric and traditional societies in order to illuminate the profound structures that, beyond the differences, are characteristic of the species. Moreover, to go from the facts (biological, ecological, linguistic and social) to the structures (cognitive, cosmological, poetic and kinship), we must concentrate on the *representation* of the former in various cultures to isolate the latter in *Homo sapiens sapiens*: we could call these fields of representation "bodyscape",

"earthscape", "tonguescape", and "socialscape", respectively, emphasizing the fact that, as equidistant from the hard cold facts as they are from the abstract structures, they constitute for the researcher an analytical middle ground, an intellectual playground that lends itself to induction and synthesis. Bodyscape, earthscape, tonguescape and socialscape must be studied as functions of a whole, of an elaborate world view in which these elements exist only in a relational system where each one is defined by the others. At the same time, we must revisit certain traditional themes of anthropology such as myth, totemism, orality and kinship, in order to demonstrate that originally it was not the social model that, by analogical extension, determined the world view. Rather, it was the all-inclusive and extremely complex ecological model, which was omnipresent in the lives of early humans, that became the historical and logical primus of culture. In other words, more than a linguistic-cognitive, socio-cognitive or organic-cognitive model, it is the "eco-geo-cognitive model" which, having become a *global symbolic system* very early, has dominated the history of *Homo sapiens sapiens* for more than 40,000 years.

To temporarily conclude, it can be said that the cognitive structures described by folkbiology, the complex eco-cultures of the hunter-gatherers, inductive geography from the Inuits to the Australian aboriginals, the numerous cases of the inclusion of landscape in language, and the ritual and mythical systems profoundly encoded in a specific place, are all strong arguments for the hypothesis of a cognitive system in *Homo sapiens sapiens* that is modeled directly on (and by) the ecosystem, whose sensory manifestation is landscape. Perhaps Gregory Bateson's "ecology of the mind" should be taken literally: landscape, with its spatial configuration, its relationship between parts and the whole, and its internal dynamism, has been imprinted on the cognitive structures of humans. Alongside theories of the mind such as Fodor's modular model (1983), Mithen's cathedral model (1996), or Lewis-Williams' neuropsychological model (2002), we can hypothesize a "landscape model", which by emphasizing the central role of the ecosystem, helps us to interpret the history of human cognitive processes in a new light.

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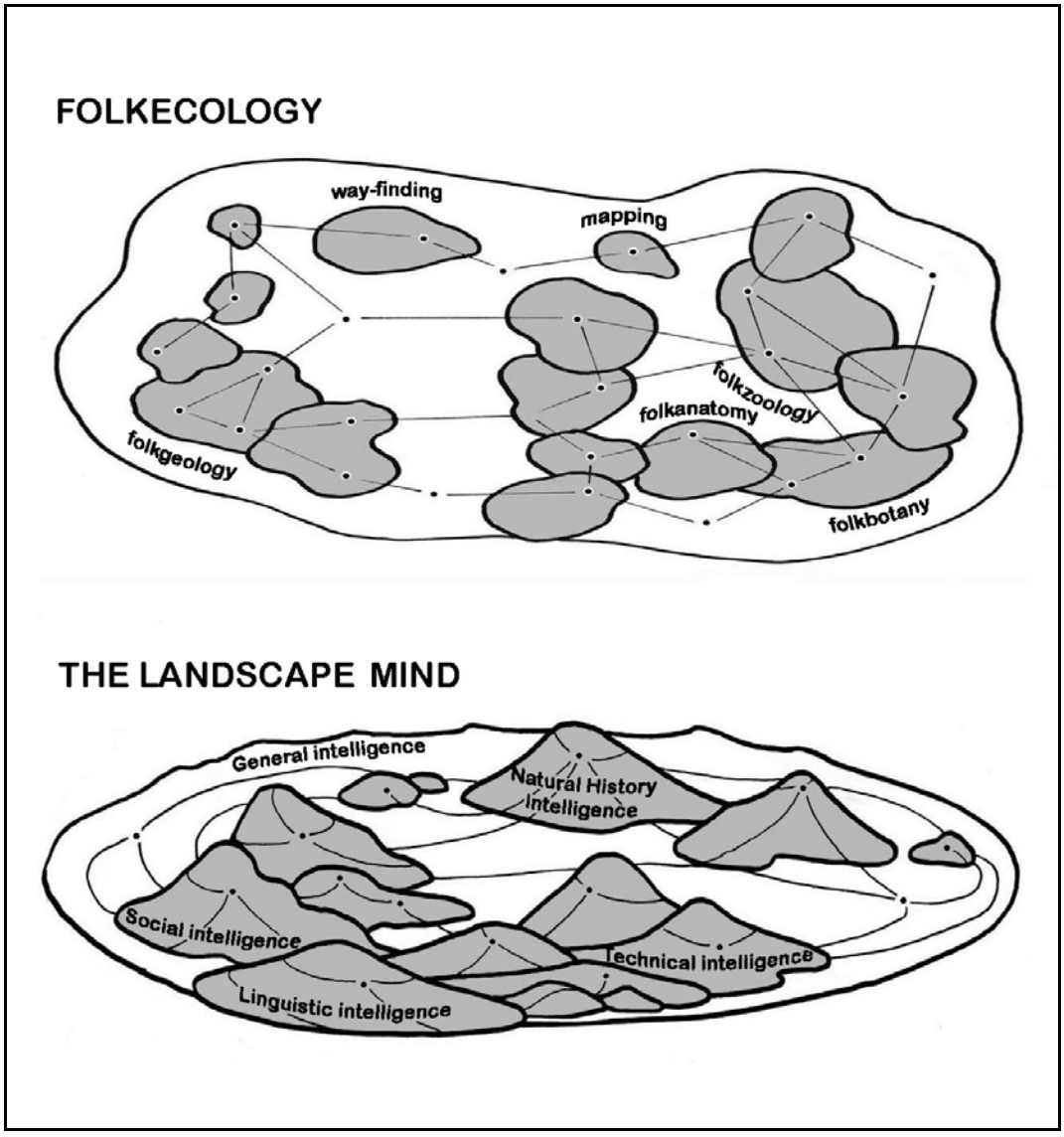

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