

# How Landscape Invented Mind

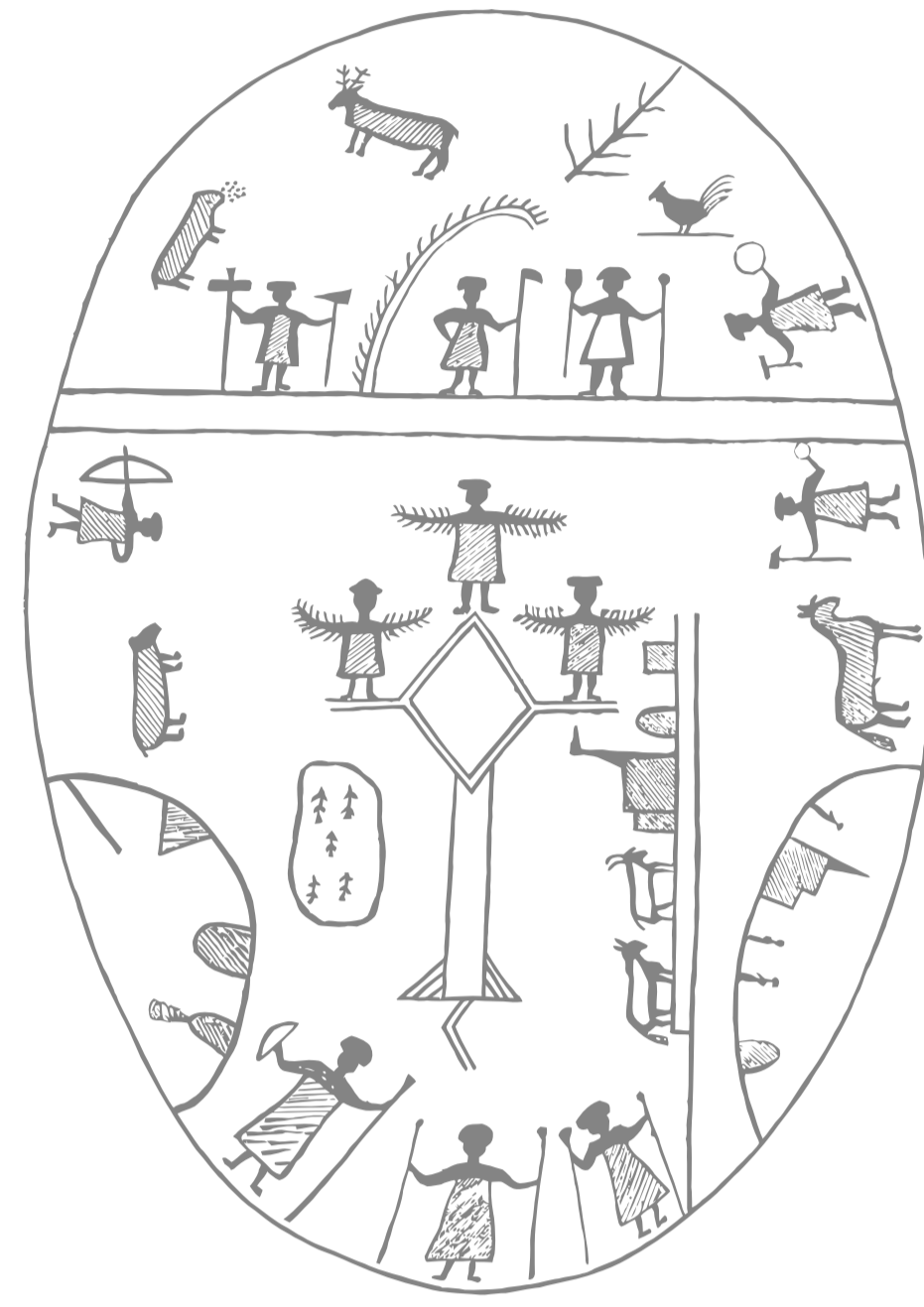
## An Evolutionary Theory

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### Introduction

The *Landscape Mind Theory* (LMT) hypothesizes the existence of cognitive modules shaped on and by the landscape, in adaptive relation to the physical world and to the forager way of life. Environmental pressure provided early hunter-gatherers with a specialized cognitive structure to solve spatial and taxonomic problems concerning the ecosystem. In *Homo sapiens sapiens* the “landscape modules” were re-used to confront other realities and to spatially organize knowledge. This “cognitive landscaping” is a universal skill documented by prehistoric,

ethnographic and western modern data, in which physical topography becomes a matrix of symbolic and topological thought. For many societies we can argue a long process by which certain ecological/economical settings render more probable and more ecologically and socially desirable the activation of landscape-oriented behaviors. Those structures are the result of a gene-culture co-evolution, and can strongly influence human institutions, such as language, kinship, beliefs, rituals and cosmologies.



### Sacred Ecology

The ecosystem is not read by hunter-gatherers as a simple database of signs and tracks, but as a semi-intentional communication among different species and objects. The intuition of an ecological homeostasis and the comprehension of a necessary sustainable conduct is translated into a system of moral and cosmological rules and beliefs. This holistic representation of the world is the main connective tissue between ecosystem and cosmology, and assures the conceptual and symbolic passage from practical landscape to ritual landscape.

*Sami Cosmology (Painted Drum, Norway)*

### Cosmological Bodies

“Places of the body” and the “body of places” are the matrix of universally diffused myths. The Australian aboriginal landscape as the metamorphosis of the ancestral beings, the Scandinavian giant Ymir from whose decomposing body the Earth was formed, Leonardo da Vinci’s proto-geology which represents the world in terms of terrestrial physiology, and James Lovelock’s Gaia theory, according to which the Earth is a living system capable of self-regulating like a unique planetary organism, are all examples of metaphorical confusion between the biological body and the ecosystem.



### Orientering and Map Making

Ethnographic accounts report numerous examples of wayfinding and cognitive mapping in which the landscape is known with deep awareness and competence. For example, certain collections of maps drawn on paper or carved in wood by the Inuit illustrate a strong capacity for mental representations of the land. This inductive cartography originates from extreme use of hunting grounds: ecological knowledge of places, solicited by natural and supernatural needs, organizes the everyday experience in topographical-topological maps.

*Inuit Map (Carved Wood, Greenland)*

### Archeology of Natural Places and Rock Art

Natural rock formations bearing a certain resemblance to humans, animals or birds become sacred places now investigated by archeology. In the same way, some European Palaeolithic rock art intentionally integrated the contours of the pictographs and petroglyphs in the anomalies of the rock substrate: the animal was “seen” in the rock first, and then “completed” with some complementary lines. To explain this visionary behavior, some have suggested altered states of consciousness (i.e. shamanism), but apophenia is sufficient to justify it.

*Whale Petroglyph (Sweden)*

### Landscape-based Languages

Landscape seems to have provided some languages with a structuring model, as opposed to the common idea that language culturally precedes the perception of the environment. For example, linguists have highlighted aspects such as the variable classification of Inuit deictics and the relativity – embedded in the morphosyntax – of the orientation of the speaker based on the land/sea axis, the axis of the winds or the transverse axis of the coast, but they have also recognized that endocentric and exocentric functions of localization or orientation are attributed even to single vowel and consonant phonemes.

### Ethnoecology

All human societies understand their ecosystems via a “categorical impulse” that classifies, conceptualizes and organizes environmental data (biology, ethology, botany, geomorphology, hydrology, pedology, meteorology, etc.). Classificatory instinct seems to be linked to a general module of the brain interpreted as the result of direct selective pressure, as suggested by interdisciplinary studies in cognitive psychology and cultural anthropology. This taxonomic behavior is a practical tool, but also a creative construction rooted in human imagination.

### Ethnoanatomy

The primal comprehension of anatomical form and physiology helped man to configure his perception of reality. The organization of the mammalian body explored by hunters provided a proto-structure that set the mind towards complexity, for thinking about other organized realities that had no direct connection with anatomy. Anatomical analogies and modeling are found in all cultures and, according to evolutionary psychology, the child’s universal fascination for animal interiors seems to be a cognitive strategy to enhance an “organistic module” of the mind.

### Cognitive Mapping and Wayfinding

Two distinct and complementary areas in the brain play a central role in the recognition and memorization of places, and are directly involved in wayfinding and cognitive mapping, i.e. spatial orientation and mental representation of the external world through codification of spatial information. Parahippocampal Place Area (PPA) is linked to the perception and encoding of spatial structure of familiar and unfamiliar places; Retrosplenial Cortex (RSC) controls topographic memory and long-term spatial knowledge of familiar places.



*Hunter-Gatherers Cognitive Mapping*

### Apophenia

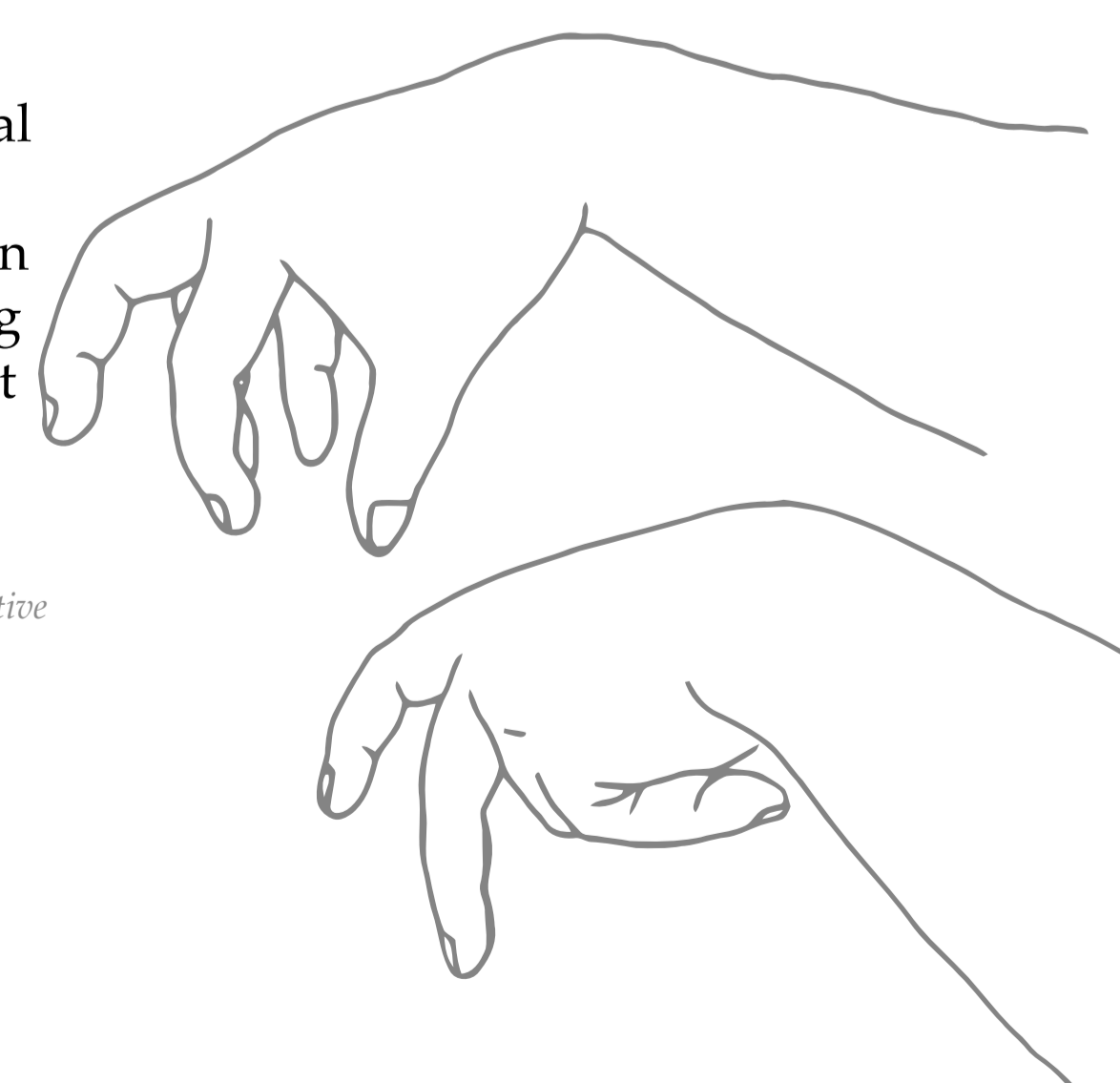
The tendency to see and seek meaningful patterns in random or meaningless visual configurations (patches, clouds, rocks, barks, foliage, etc.) is a relevant meaning-making strategy that compels humans to over-interpret reality. From an evolutionary standpoint, apophenia may have played an essential role in the predation and escape mechanisms – where mimicry and recognition of danger in ambiguous perceptive contexts are involved – but also in supporting a “belief-generating machine”. Connected to delusional thought and to supernatural beliefs, apophenia is the “stem cell” of human imagination.



*Apophenic Rock Profile*

### Neuro-Narrative

According to the Neo-Darwinist literary theory, fiction is a form of cognitive play that enhances pattern recognition, suggests alternative scenarios, aids in the construction of social identity and organizes the mind by giving emotional and aesthetic form to human experiences. Fiction uses imagination as a cognitive glue that creates unexpected connections among distant things, thus structuring and explaining perception, but especially seeking “invisible agents” believed to have some impact on human and non-human existence.



*Gestual Narrative*

### Discussion

The brain of *Homo* evolved to think about landscape and to think of reality as a landscape. If “landscape modules” of the mind were shaped in the Pleistocene forager context, and if those modules consist in creating a cognitive bridge between traditional knowledge and the neuropsychological skills involved in spatial recognition, then we must expect to find examples of landscape-oriented behaviors where the ecological/economical context is similar to the original one. The high incidence of cognitive landscaping in today’s hunter-

gatherer societies is well documented, but the “test rig” of the LMT is neurological research. Experiments using fMRI could verify whether there are connections among cognitive mapping, wayfinding and taxonomic thought; to what degree the data from experience is spatially organized in landscape-based structures; and if conceptual speculation activates cerebral areas involved in hunting and gathering activities, such as classificatory attitudes, wayfinding, cognitive mapping, over-interpretation, apophenia, narrative memorization, etc.