Montology

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"Montology" is the holistic, integrative and transdisciplinary science of mountains, inclusive of physical, social, theoretical and empirical disciplines, as well as humanities and arts associated with mountainscapes.

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1. Historicity of the Term

“Montology” – a term coined by mountain geographers Jack D. Ives in Canada and Bruno Messerli in Switzerland – requires transdisciplinary study if our understanding about SES is to truly reach its fullest potential (Mainali and Sicroff 2016). “Inter-disciplinary” and “Multi-disciplinary” approaches of the past have only resulted in a fragmentation of opinion and study. The cross-cutting theme of mountains, thus, requires a “Trans-disciplinary” framework.

One of the first accounts (Mahat and Bloom 2008) states,“The term montology has been used in oral communication, and in print many times over the past twenty-five years. According to Jack Ives, the term was first informally introduced by Frank Davidson in 1974 in Munich, Germany, at the same conference in which the journal *Mountain Research and Development* (MRD) and a future International Centre for Integrated Mountain Development (ICIMOD) were envisioned (Jack Ives in personal communication with Robert E. Rhoades). The Munich conference proceedings reported: “just as oceanography has spawned a number of major and minor institutions concerned with the protection and development of ocean resources, so mountainology, once its importance and implications are realized, will lead to a proliferation of institutional responses” (GTZ, 1974:186). In subsequent discussion between Frank Davidson and Jack Ives, the term mountainology was dropped in favor of montology”.

When the call went out to change “mountainology” to “montology” in 1974, the first hurdle was lexicographic, i.e., convincing the world that the name of the science had changed. The so-called “Club of Munich” (a group of scholars that organized the experts’ workshop on mountains in Munich) persisted in the effort of highlighting mountain research, which became stronger with the addition of American scholars such as Paul Baker, Ben Orlove, Steve Brush and Colin Rosser, and the consolidation of the International Mountain Society (IMS) and its journal *Mountain Research and Development* (MRD) (Ives 2005). The International Geographical Union (IGU) via its Commission of Mountains also supported this trend, first with Troll’s geocology trend and later with Ives’ montology prominence. Soon after, this momentum fared prominently in the Cambridge Mountain Conference of 1977, demonstrating a widespread need for transdisciplinary approaches in the field. The proceedings from that conference say,

“At the Cambridge Mountain Conference in 1977, participants discussed the creation of a discipline for the study of mountains, as has been accorded to oceans, and gave it the name of montology, to denote an active, protective emphasis.”

The first paper printed on montology soon followed (Neudstadtl 1977). However, its global attention was launched with the publication of the book “Mountains of the World: A Global Priority” (Messerli and Ives 1997): in its final chapter (pp 460-466), coauthored by both of them and Robert Rhoades, they gave a coda with a specific call to make montology the science of mountain studies. This book was widely distributed as preparations for the celebration of the International Year of Mountains (IYM) held in 2002. This edition has been translated into many languages and updated to emphasize regional priorities (e.g., Badenkov 2002; Sarmiento 2003). The term montology was included in the unabridged Oxford English Dictionary in 2002, generating debate between those that saw it as jargon or unnecessary, and those that claimed disciplinary identity with the exclusive moniker.

Many researchers from the Global South became advocates of the term, as shown in many articles of the *Journal of Mountain Science* (JMS) published by the Chinese Academy of Sciences and Springer and in several exchanges of the Mountain Forum (MF). In addition, because of the multidisciplinary nature of mountain ecosystem studies, many articles

of PIRINEOS, the *Journal of Mountain Ecology*, published by the Spanish Council of Science and Technology, have covered the gamut of topics for montology.

2. Data, Model, Applications and Influences

With the advent of critical social theory and postmodernism, scientific disciplines that followed strict frameworks of quantitative, descriptive, dialectic phenomena in the hypothesis-testing procedures, have found the need of incorporating qualitative, analytic phenomena of trialectics. This requires a different mindset, as well as different tools and protocols, such as onomastics and term causation or etiology, political ecology explanatory tropes and critical biocultural heritage paradigms (Sarmiento 2016a). The fruitful discussion about mountains as research subjects and their methodologies have been explored elsewhere (Debarbieux 1999; Sarmiento 2001; Funnell and Price 2003; Perlik 2019).

Thus, in order to understand mountain theory from either side of the scientific divide, whether following Cartesian determinism or Spinozan relativism, the need of a transdisciplinary field for mountain studies is self-evident for sustainability paradigms (Painter 2008; Hansson 2012). Following the “cartographic anxiety” (Gregory 1994) of mountains, created by linkages of nature/culture defiant of truism, it urges the epistemology of geoliteracy (*critical- in),* ecoliteracy (- *of)* and sopholiteracy (- *through)*. Thus, montology becomes a *tour-de-force* of current thinking of mountain research, particularly in the Global South, where the majority of humanity practice non-Western thought (Sarmiento and Frolich, 2020).

To reify the mountain epistemes, I use the Arabic term *al-barzakh* that describes a condition for the Islamic afterlife, what Catholics interpret as “purgatory” in Western thinking. However, it goes much further in describing the fuzzy line that separates two adjacent realities that are often hard to separate. For instance, the line that separates life from death, light from darkness, or the line that separates the present from the past, or even the separation of the seen and the imagined, some even suggest that separates what constitutes the realm of humans and of gods. This is precisely what montology does in helping to understand the trifecta of mountain ecosystems, by helping to form a complete picture of the mountainscape.

Using the example of the Andes, the epistemology of mountains can be either deducted from what it seems and it can be touched and measured (in terms of its “Andeanity”), or can be inducted from what it appears to be and it can be conceived and planned (or “Andeaness”), or can be subducted from what it means and it can be revealed and imagined (or “Andeanitude”). The Sarmiento’s trilemma has now been applied to explain Andean identity and the force that moves effective mountain conservation (Sarmiento 2016b) based on the reciprocity concept of the Andean lifescape (or *Ayni*) that lays in the interstitial space of this *al-barzakh.* Therefore, the Sarmiento trilemma for Andean identity can be applied to find the “essence of place” in other mountain systems as well, by incorporating the so-called deep ecology consideration of landscape dynamics, to complement the simplistic landscape metrics to describe measurable attributes (Ritters 2019). You may think of Alpeaness, Appalachianity, or Himalitude when you are searching in the people of mountains for the hidden mental framework of the Alps, the physical spatialities of the Appalachians or the sacred and spiritual markers of the Himalayas. [1][2][3][4][5][6][7]

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