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Author: Knapp, Sandra

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Contesting *Páramo*: Critical Biogeography of the Northern Andean Highlands

By Fausto O. Sarmiento. Charlotte, North Carolina: Kona Publishing and Media Group, 2012. xiv + 134 pp. US$ 59.95. ISBN 978-1-935987-31-4.

This slim volume provides an orthogonal view of a key mountain ecosystem in South America, the high-elevation grasslands called *páramo*. *Páramo* has long been seen by biologists as a classic island ecosystem, and much effort has gone into the use of island biogeography as a paradigm for explaining the development and diversity of these island-like habitats. Sarmiento takes a very different view. His contention is that *páramo* is a human construct and should not be treated as a pristine habitat; human interventions in *páramo* and their effects on communities and ecosystems of the Andes must be taken into account in consideration of the future of *páramo* and its conservation. The book will be difficult reading for many biologists (I found it challenging) because Sarmiento uses language more commonly used in the social sciences to describe his vision for analysis of Andean mountain ecosystems.

There are many different kinds of biogeography, such as island biogeography, vicariance biogeography, cladistic biogeography, and dispersal biogeography, but the view in the book is characterized as a new field: critical biogeography. In Sarmiento's definition, critical biogeography differs from all of the above in that it involves the questioning of received wisdom. Surely that is what all science is, or should be, about. The general contention is that those studying Andean systems do not take into account the effects of Andean people, past and present, on the systems in which they live, and that the new discipline of critical biogeography will change that. I do have a great deal of sympathy with this view: for a long time, and still today, "pristine" or "untouched" wilderness or primary forest is spoken of as if those habitats were the only ones worth concerning ourselves about. But the science of today is not the same as that of yesterday and, in the past decade, scientists have come to a much deeper understanding of the interactions between local peoples and their environments in shaping the habitats we see today. Nature, however, is complex and far predated the arrival of our own species *Homo sapiens* in the mountains of South America. The first evidence for humans apparently crossing the Central American land bridge and settling the continent only dates to approximately 15,000 years ago, a blink of an eye as evolutionary time goes! So, studying the island biogeography of *frailejones*, the spectacular *Espeletia* species so characteristic of the *páramo* habitat in northern South America, is probably not such a crazy idea after all: their distribution patterns are likely to have predated human impact on their environment by quite a long way, and molecular dating studies confirm this.

Tropical mountains have always had a hold on the imagination, the idea of the land rising so fast from the "impenetrable" forests of the lowland tropics is an image too fascinating to let go. The great geographer Alexander von Humboldt's now iconic illustration of Volcán Chimborazo (Chimburazu in Quechua as Sarmiento points out, he carefully uses the Quechua spellings for Andean place names throughout the book) is an example of the equivalence of altitude and latitude that shaped and still shapes thoughts about how mountain ecosystems work. Sarmiento contends that this is a retrograde step, and the overreliance on temperate zone paradigms for the climate and temperature zonation of tropical mountains has had a retarding influence on the understanding of their true nature. There is much in what he says; in a landscape so heavily influenced by people, leaving them out of the equation is unrealistic at best, and outright idiotic at worst. Imagine discussing the landscape of England, for example, without reference to human alteration of the habitat. Here in northern Europe, we take the human touch for granted after all, we are it. Perhaps when we see a habitat that is not quite the same, we forget those same obvious truths. The grassy *páramos* are indeed rather like the chalk grasslands of the Downs in England—not on chalk, to be sure, but, according to Sarmiento, maintained by grazing in the same way.

Sarmiento uses the language and philosophy of poststructuralism to construct what he calls "Sarmiento's trilemma," a definition of Andean that defines a geo-eco-cultural identity. This involves "andeanity," physical characteristics, "andeaness," cryptic, emergent properties, and "andeatitude," a sort of mystic spiritual axis. I am not entirely convinced that this gets us much further in understanding the fascinating and complex landscape that is the northern Andes, but it is the framework for this entire book, so it is worth trying to figure out. I am not sure I managed.

Complex and frustrating as this book is at times, it can be irritating too, when Sarmiento assumes that biologists have it all wrong when they call the Andean wolf a wolf when it is really a fox; well, so what, it is only a name! The book does have an important message for those interested in mountain ecosystems anywhere: People matter. They affect the landscape in both positive and negative ways, and the study of geography without taking the effects of our own species into account is only a start. It is so tempting to assume that places far from the completely human-altered landscapes of the northern Hemisphere are pristine or in some way "natural," but that is not the real story. The geological template of the mountains themselves creates a massive canvas for all the organisms that live there to interact: teasing out what patterns are human-created and what came before humans arrived is not easy. But several patterns do exist, and I think Sarmiento does the scientific community a disservice by suggesting

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that most investigators completely ignore the cultural aspects to this pattern. In a way, the book is slightly out of date; it seems to be railing against a view that held sway more than a couple of decades ago. Science, it seems to me, often consists of thinking that you have figured something out, only to find that all one has done is reveal further complexity. The Andes are a bit like that, and, in this little book, Sarmiento does a very interesting job of revealing a different way of looking at, or, as he says, contesting that complexity.

AUTHOR

Sandra Knapp
s.knapp@nhm.ac.uk
Department of Life Sciences, Natural History Museum, London SW7 5BD, United Kingdom

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