



**Marco Ferrari, Elisa Pasqual, Andrea Bagnato.** *A Moving Border: Alpine Cartographies of Climate Change*. New York: Columbia Books on Architecture and the City. Columbia University Press, 2018. 227 pp. \$30.00, paper, ISBN 978-1-941332-45-0.

**Reviewed by** Dani Inkpen (Cape Breton University)

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**Commissioned by** Daniella McCahey (University of Idaho)

Mountains, rivers, and glaciers have long served as a basis for delimiting political boundaries in the Western cartographic tradition. Seemingly fixed and given, they have served as "natural" boundaries for states. Yet anthropogenic climate change has destabilized beliefs in the fixity of these features, highlighting the flexible and constructed nature of boundaries in new ways. *A Moving Border: Alpine Cartographies of Climate Change* is a multidisciplinary edited volume that sees the disruptions of climate change as an opportunity to rethink the materiality of borders. It is a record of the Italian Limes Project, an architectural-cartographical endeavor that ran from 2013 to 2016 on the Gräfferner glacier between Italy and Austria.

Since the Treaty of Utrecht (1713), alpine borders have been largely demarcated along drainage lines of major watersheds. For a long time cartographers simply traced lines across the white glacial expanses of their maps, taking for granted the permanence and objectivity of the natural border that anchored and sanctified the political one. Today, these mountain glaciers are icons of a novel, rapidly changing climate that wreaks havoc on assumptions of a stable nature. Responding to the glaciers' recent dynamism, in 2005 and 2009 Italy signed bilateral agreements with Austria and

Switzerland that defined their respective mountain boundaries as "moving borders"—a confine "no longer permanently fixed, but that depends on the gradual changes caused by the erosion and reduction of the glaciers, up to the extreme instance of their disappearance." [1]

Rather than regard moving borders as a disruption of a preexisting "natural" order, the creators of the Italian Limes Project treat them as an opportunity to probe the constructed materiality of borders. The project tracked the movements of the Austrian-Italian border in real time by having the Gräfferner glacier draw its own movements. In April 2014, a line of solar-powered GPS sensors was laid along the watershed divide to detect the glacier's movements. Two years later the line was replaced by a grid of twenty-six sensors that enabled greater accuracy. The data from these sensors was relayed to a pantograph (a cartographic device that plots lines on maps) that (once imbued with the proper code) plotted the data from the sensors automatically. The book comprises textual and visual records of this field work, the archival research that underwrote it, and a series of essays on its theoretical implications.

*A Moving Border* contains four author-attributed essays which delve into theoretical themes that emerged from the project: the ongoing cultur-

al and political work required to maintain Western notions of boundaries; the futility of measurement as a way of epistemologically fixing the natural world; and the agency of natural features—glaciers and mountains especially—in shaping boundary-making practices. Intercalated with these essays are unattributed mediations on the Western cartographic gaze, the history of territory as *the* abstract manifestation of national power, a brief history of modern alpine glacier representation and recession, and reproductions of archival documents from the Istituto Geografico Militaire (IGM), Italy's national geographical institution, which provide an overview of how Italian borders have been determined and represented since 1861.

In his opening essay, "The Instability of Terrain," geographer and political theorist Stuart Elden deploys cases from the history of boundary making to show that borders are not "fixed lines on the ground" (p. 54) but conflictual processes operating in three dimensions, often using recalcitrant materials: glaciers, rivers, mountains, swamps deserts, and deltas. Water, in its propensity for rapid state changes, is especially troublesome for aspirations of permanence. If fluid nature provides poor material for stable boundaries, then culture and politics must be called upon to buttress their legitimacy. In "Laying Claim," anthropologist Mia Fuller explores the making of modern Italian territories as exercises in internal and external colonization. The incorporation of Sicily, Eritrea, Libya, and the South Tyrol are each read as attempts to cultivate national Italian-ness in spite of cultural dissimilarity within the confines of arbitrary borders.

The futility (and enduring allure) of measurement as a way of knowing the natural world is most forcefully articulated in Francesca Hughes's essay, "Inequalities of Ice." Creatively juxtaposing science and art, she oscillates between nineteenth-century techniques for measuring glacial motion and the obsessive-compulsive arrangement of pebbles in the pockets of Samuel Beckett's titular char-

acter Molloy. Both Molloy and early alpine surveyors like Joseph Vallot, she suggests, are consumed by the unattainable goal of fixing the dynamic and are hampered by their own hopeless desire for perfect measurement. Nature's capacity to sabotage human ambitions of perfect line drawing is further explored in an interview with the activist-author-artist Wu Ming 1 (Roberto Bui), whose historical fiction explores borders as spaces of political and cultural critique. Expanding upon themes in Fuller's essay, he delves into the polarity of mountains as spaces for the construction of national identity and spaces of resistance; as internal colonies and perhaps, borrowing from Naomi Klein, "sacrifice zones."

The Italian Limes Project focused on the materiality of borders, something the book seeks to convey largely through representations, including high-definition landscape photographs and sumptuous fold-out maps of Italy's border regions. The goal of the project was to allow the glacier to speak for itself, translated and transcribed by sensors, grid infrastructure, data, code, drawing machine, and map—a layered apparatus that is ultimately frustrated by a seemingly inconsequential material constraint: the thickness of the line tracing the glacier's movements on paper. In a book permeated by an appreciation of measurement's limits, it is perhaps fitting that the final "word" is given to a two-page photograph of a white alpine plain against a palisade of looming mountains. In the foreground, two fragile-looking sensors sit lonesome as lunar landers, dwarfed by a domineering landscape that melts into a milky sky above. While it might seem that the editors wish to offer photography as a way of conveying a sense of "being there" in lieu of precisely measured representations, they nevertheless conclude that the project's maps are a "direct product of the movements of the glacier itself" (p. 178). If glaciers speak, it seems they do so ambiguously.

*A Moving Border* is jointly published by Columbia Books on Architecture and the City and the

Center for Art and Media Karlsruhe. Beyond architects, it will appeal to visual studies scholars, geographical historians, and mountain studies scholars. It may also be of value to Italianists, as it offers fresh perspectives on themes such as Fascism and nationalism. Historians with an interest in practice will likely wish for more, as the book's emphasis on materials tends to overshadow the actors and practices that produce representations of borders. Charts, sketches, grids, and photographs from the IGM archives are minimally narrated. While some readers may find this simulation of the archival experience enjoyable, they are left wondering who made the trigonometric measurements transcribed in the charts and who built the stone survey stations pictured. So too, the documentation of the Italian Limes Project fieldwork. Unnamed figures are pictured laboring in the alpine, but are captioned in the passive tense: grids are laid and sensors placed.

“Limes” is a Latin word that originally referred to a path or byway, a route between places that connects rather than separates. In its modern usage it has come to mean something closer to “frontier,” suggesting territories of potential conflict. *A Moving Border* questions the naturalness of borders, thereby bringing their geopolitical construction into vivid clarity. In the background of the project looms the hardening of post-Schengen European political borders. Though select “natural” boundaries may prove malleable, political ones appear to be calcifying; this insight and the book's reminder that borders are made, not discovered, will undoubtedly prove valuable in a post-Covid world.

#### Note

[1]. Camera dei Deputati, *Assemblea, Resoconto Stenografico*, XVI Legislatura, Seduta 162 (April 20, 2009), 11 (statement of The Hon. Franco Narducci), <http://documenti.camera.it/dati/leg16/lavori/stenografici/sed162/SINTERO.pdf>, trans. Ferrari, Pasqual, and Bagnato.

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