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Challenges to Fieldwork before 1914 and Today: Adaptation, Omission, Rediscovery

Introduction

John Chappell and, before him, Lord Curzon have reminded us that much can be gained from reviewing earlier writings and from listening to interruptions and silence.[1] In January 2010, I discovered with amazement a wealth of unpublished observations while scrutinizing the drafts of maps made by the productive and flamboyant Dr. Sven Hedin (1865–1952). Secluded for decades in the National Archives of Sweden, Hedin's precise information on the vegetation types, soil and water qualities, animal tracks, former shorelines, and abandoned settlements of Tibet and Xinjiang would have been valuable for the elaboration of a theory on climate change in extreme environments.

We could find in these archives an instance of "lipography," a word I have coined after George Perec's notion of the "lipogram," referring to a text in which one letter of the alphabet is intentionally excluded.[2] The lipographical suppression of fieldwork-based evidence is a deliberate operation that creates new constraints on the discipline, after which "everything becomes possible."[3] A lipographical map, for instance, is a topographical map that does not allow us to reconstruct the environmental history of the area surveyed because key information has been removed. A lipographical article is a publication in which the geographer compels him/herself (or feels compelled) to exclude one of the data sets gathered during fieldwork, not out of ignorance, but because of an awareness of the challenges I analyze below.

To discuss an unspectacular case of lipography in a field-based discipline that became systematic before World War I, let us consider the challenges we meet today compared to

1 John E. Chappell, Jr., "Climatic Pulsations in Inner Asia and Correlations between Sunspots and Weather," *Palaeogeography, Palaeoclimatology, Palaeoecology* 10, no. 2–3 (1971): 177–97; Curzon in John Walter Gregory, "Is the Earth Drying Up?," *The Geographical Journal* 43, no. 3 (1914): 313–18. George Nathaniel Curzon, the president of the Royal Geographical Society of London, was Viceroy of India (1898–1905) and Foreign Secretary (1919–1924). His first feat was the exploration of the sources of the Amu Darya River in the Pamir Mountains.

2 George Perec, "History of the Lipogram," in *Oulipo: A Primer of Potential Literature*, ed. Warren F. Motte (Chicago: Dalkey Archive Press, 1998), 97–99. Amounting to a sort of word game, lipograms often exclude very common letters. For example, a lipogram in English might involve an entire poem without the letter E.

3 Ibid., 107.

the challenges met by explorers a century ago. The Royal Geographical Society of London (RGS) used to play a leading role in conflicts over the kinds of geography and survey work that were deemed acceptable. Between 1870 and 1914, in order to distinguish themselves from travel writers, explorers, and colonial officials, the geographers of the RGS devised new rules for the assessment of discovery claims.[4] The second part of this paper examines how mountain explorers informed debate held at the RGS on climate and civilization. The debate, made public in 1907 by a doctoral student, caused much consternation among the "gentlemen of science," to whom climate was by definition stable.[5]

Five Challenges to Mountain Fieldwork Today

1. Physical Engagement

A comparison of the challenges in doing mountain fieldwork now, as compared to a century ago, would highlight several differences. The differences are seen less in tools (the ubiquitous GPS, cell phones, battery chargers, and Japanese instant soups) than in density: we cannot allow ourselves to disappear for years on end like Sven Hedin did in 1906–1908, nor can we slow down the pace of our motorcades because we want to finish a watercolor; the yak drivers of yesteryear, on the other hand, could easily wait. Our personal engagement with the terrain is therefore usually limited to a couple of intensive weeks in summer. This deprives us of the rich interactions explorers had with native informants one hundred years ago. In the field, we now ignore our illiterate Afghan chauffeurs, Tajik fixers, Pakistani cooks, and Nepalese sherpas. Rare are the geographers who bother to learn the languages of the Pamir Mountains and the dialects of the Tibetan plateau, for instance, in order to work on glacier depletion. The scientific travelers whom the RGS used to criticize for their lax professional ethics have become academics who are Facebook and Instagram addicts. We never really find ourselves "here" or "there," since we remain dependent on communication with the outside world.

2. Logistics

Today, major challenges occur before, not during or after, the field season. The only reviews that really matter to us are those of our project proposals: "How will my review of

4 Peter Collier and Rob Inkpen, "The Royal Geographical Society and the Development of Surveying, 1970–1914," *Journal of Historical Geography* 29, no. 1 (2003): 93–108.

5 Freeman Dyson, "The Question of Global Warming," *The New York Review of Books* 55, no. 10 (12 June 2008).

the state of the field be reviewed?" One century ago proposals were not reviewed, but post-factum results were—maps, lectures with magic lanterns, and publications in society journals. Mountain fieldwork has always been an expensive activity, even if we no longer need to buy a pack of goats to feed our team for the next three months. The biggest differences I see in today's challenges lie in funding agendas, mechanisms, and scheduling. Rather than originality, funding agencies generally review proposals for reliability, accountability, and predictability. Administrative requirements, combined with cutthroat competition, have actively discouraged the articulation of new and risky ideas that would come from the patient probing of a terrain. Of course we can choose between private foundations and support from state and intra-governmental institutions, each with its own set of priorities. One hundred years ago, I would have turned to the Nobel family in Saint Petersburg or King Oscar II for help, or (being French) to the Ministère de l'Instruction publique. Presumably they would have been interested in hearing more about outcomes (glory and progress) than about processes (frameworks and leading questions).

3. Reviewers

Since the publication of the fifth IPCC assessment report rekindled the debate on observed and projected climate change, we have developed an appreciation for the instability of the Holocene and a willingness to reconsider climate's salient role.[6] Raising the level of the debate is probably all that can be expected from historians and geographers.[7] Rediscovering Ellsworth Huntington's theory and confronting Hedin's data raises uncomfortable questions, not so much about the mountains of Asia, but rather about the nature of scientific knowledge. Huntington's popular *Civilization and Climate* led to the recognition by the general public of a direct link between climate and history five decades before physicists noted changes in the chemistry of the atmosphere.[8] Asking what the consensus on climate change was in 1914, or is in 2014, amounts to asking why science is generally slow at accepting positive claims, rich in disagreements, skeptical of new sources and ancient modes of knowledge production, and subject to being hijacked by today's dominant discourse, replete with clichés, metaphors, models, rituals, and "key reports."[9]

6 Neville G. Brown, *History and Climate Change: A Eurocentric Perspective* (London: Routledge, 2001), 289.

7 Quoted from Albert Hirschman's *The Passions and the Interests* in Freeman Dyson, "The Question of Global Warming: An Exchange," *The New York Review of Books* 55, no. 14 (25 September 2008).

8 Ellsworth Huntington, *Civilization and Climate* (New Haven: Yale University Press, 1915).

9 Maria Ivanova, review of *The Science and Politics of Global Climate Change,* by Andrew E. Dessler and Edward Parson, *Global Environmental Politics 7,* no. 2 (2007): 145–47. See also Bill McKibben, "Can Anyone Stop It?," *The New York Review of Books* 54, no. 15 (11 October 2007).

4. Audience

Finding experts who are tolerant of dissident approaches and exotic topics would be a major challenge. The professional publications and internal discussions that follow mountain expeditions are crucial for the creation of a community of experts.[10] The quality of the work done in the field has been challenged by shifting standards in knowledge production, data integrity, and academic accountability elaborated by diverging disciplines. This explains why the contents of early twentieth-century scientific reports and expedition accounts have remained largely ignored.[11] The educated public may nevertheless find value in a discussion of a neglected body of literature that could present tantalizing insights on today's state of climate research.[12] Reaching that audience directly is another challenge.

5. Ongoing Relevance

A lunar crater has been named after Sven Hedin. Humans have not set foot on the moon since 1972, when this mission brought back rock samples. Four years ago these rocks were analyzed for evidence of graphite, a quest that Harrison Schmitt of Apollo 17 had certainly not envisioned. Samples yielded discrete pockets of graphite that astrobiologists believe to be the remnants of an intensive bombardment of meteorites four billion years ago. With the use of new methods, the resources of the Apollo program appear far from exhausted.[13] We might say the same about the scientific data gathered by the explorers who crisscrossed the highest mountains of our planet in the early 1900s. Here would be our last challenge: through geo-information techniques, make these collections relevant for our current research on climate change. Digitization projects being carried out in London and Stockholm have already begun to take on this challenge.[14]

Five Challenges to Mountain Fieldwork One Century Ago

The debate about climate variability that Eduard Brückner, Julius Hann, and Svante Arrhenius (the Swedish Nobel Prize winner who discovered the greenhouse effect)

10 On "epistemic community," see Pierre Bourdieu, *Science de la science et réflexivité: Cours du Collège de France, 2000–2001* (Paris: Editions raisons d'agir, 2001), 77–90.
11 For information on the challenges of the fieldwork being currently done on the environmental history of the mountains of Inner Asia, please visit Lars Larsson's website, http://svenhedin.com/.
12 Nico Stehr and Hans von Storch, eds., *Eduard Brückner: The Sources and Consequences of Climate Change and Climate Variability in Historical Times* (Dordrecht: Kluwer Academic Publishers, 2000), 18.
13 John Matson, "Lunar Pencil Lead," *Scientific American*, September 2010, 9.
14 See "The Silk Road Online," British Library International Dunhuang Project (IDP), http://idp.bl.uk/.

launched around 1890 remained apparently confined to a German-speaking circle of academics who had studied glaciation in the German and Swiss Alps. In 1888 Eduard Brückner had made deductions from fluctuations of the Caspian Sea, a region whose steppes Piotr Kropotkin had already investigated for clues on climate history.[15] Although comparisons were quickly made with the American Southwest, the Sahara, and the Levant, the evidence on past climates was first collected in Inner Asia.[16]

1. Funding

The turn of the twentieth century saw many expeditions undertaken to survey the topography of Iran, Xinjiang, and Tibet, as well as the formidable Pamir, Trans-Himalayan (Gangdise), and Kunlun Mountains.[17] The financial, logistical, and technical support for mountain fieldwork, which came from imperial agencies, made possible extensive journeys that provided the topographical data that were critical to new theories on climate change and the reconstruction of unexpected sequences of catastrophic events.[18] Unlike researchers today, scientists a century ago could not apply to a range of funding sources. However, once they were able to secure patronage, the support made possible extensive journeys without any supervision.

2. Methods

The publications of notes, results, and travelogues that portrayed "Old Lands and New Conditions" quickly followed upon the return of their expeditions to civilization. Sven Hedin, Ellsworth Huntington, and Aurel Stein were prodigious writers who relied on local informants they thoroughly quizzed.[19] The challenges they had met were initially related to the heterogeneous concepts, tools, and practices used to collect and process information on environmental change in specific locales. Patient measuring, counting, mapping, excavating, good luck, and their intimate familiarity with the terrain and native languages led explorers to reconstruct the history of vanished civilizations and specu-

15 Piotr Kropotkin, "The Desiccation of Eurasia," *The Geographical Journal* 23, no. 6 (1904): 722–34, and "The Desiccation of Eurasia: Discussion," 734–41.

16 Ellsworth Huntington, "Across the Ghor to the Land of Og," *Harper's Magazine*, March 1910, 667–78. See also Sven Hedin et al., "De vetenskapliga resultaten av våra expeditioner i Centralasien och Tibet 1927–1935," *Ymer* 4 (1935): 289–338.

17 For example, Sven Hedin's expeditions in 1894–1897, 1899–1902, and 1905–1908.

18 Svenska sällskapet för antropologi och geografi, eds., *Hyllningsskrift tillägnad Sven Hedin* (Stockholm: Generalstabens litografiska anstalt, 1935), 164.

19 In 1909–1910 alone, Hedin published *Transhimalaya* and *Öfver land till Indien*, totaling 2,385 pages. See: Sven Hedin, *Transhimalaya: upptäckter och äfventyr i Tibet* (Stockholm: Bonniers, 1909) and Öfver land till Indien genom Persien, Seistan och Belutjistan (Stockholm: Bonniers, 1910).

late on their complex relationships with nature. These explorers relied on various visual supports to record, organize, and preserve diaries, field notes, and data, which allowed them to make educated guesses when they surveyed archeological sites, like those of Loulan, that had chronicled societal collapse.

3. Results

The first small-scale maps of the oases of the Taklamakan and Gobi deserts, as well as watercolors of the terminal lakes of the Tibetan plateau, were significant because they highlighted physical features that defined the last 2,500 years of the climate and human history of Asia (fig 1). With their universal conventions for showing geographic features and elevations, maps were expected to provide definitive answers on the stability of natural conditions.[20] Through these maps, lake oscillation, climate pulsation, and soil desiccation shared the same methodology and visual language. Colleagues in Europe expressed their doubts about the reliability of techniques for ground route mapping and made fun of mountain maps that looked like skin diseases. The British Survey of India felt a need to make it known to the editors of *The Geographical Journal* that it did not share London's low opinion of route mapping. Although Hedin described his mapping methods at length his 1927 publication *Eine Routenaufnahme durch Ost-Persien*, the gap in the English-speaking literature on field cartography was closed only in 1957—too late to influence the debate and do justice to fieldwork research.[21]

4. Review

Back home, new challenges were awaiting the explorers of Asia: public lectures, discussions, questioning, and peer reviews by scholarly societies. In 1906, Ellsworth Huntington, then a student at Harvard, published a report in the *Geographical Journal* that confirmed Kropotkin's deductions on the historical pace of climate change. During his years of doctoral fieldwork in Persia and Turkestan, he had witnessed a process of desiccation, "which is the last faint undulation of the great climatic waves of the Glacial Period."[22] According to his *The Pulse of Asia: A Journey in Central Asia Illustrating the Geographic*

20 Sven Hedin, *Scientific Results of a Journey in Central Asia, 1899–1902*, vol. 2 (Stockholm: Generalstabens litografiska anstalt, 1905), 327.

21 Sven Hedin, *Eine Routenaufnahme durch Ost-Persien* (Stockholm: Generalstabens litografiska anstalt, 1918–1927). See also: Wilhelm Filchner, Erich Przybyllok, and Toni Hagen, *Route-Mapping and Position-Locating in Unexplored Regions* (New York: Academic Press, 1957).

22 Ellsworth Huntington, "The Rivers of Turkestan and the Desiccation of Asia," *The Geographical Journal* 28, no. 4 (1906): 353.

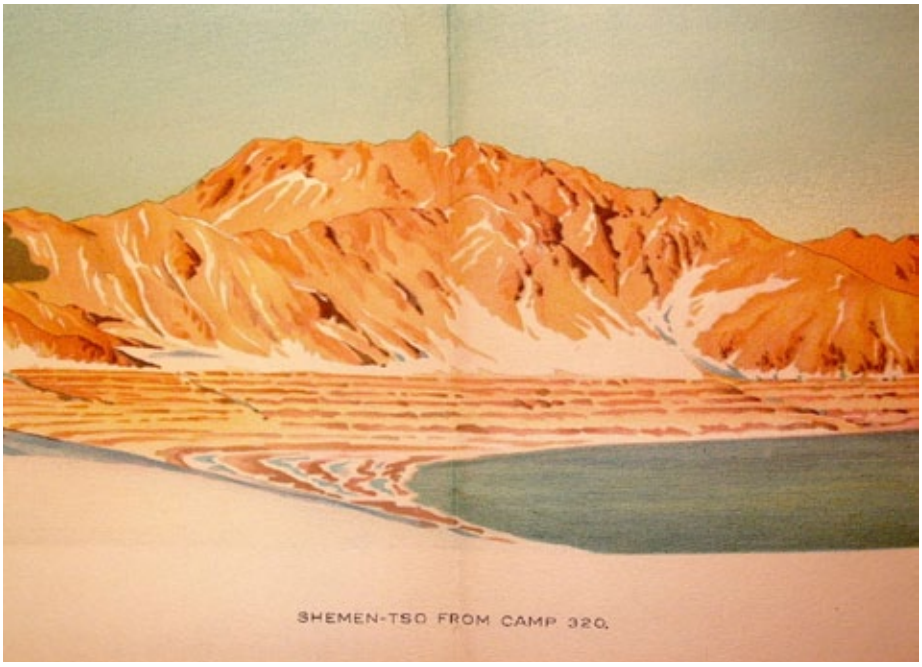

Figure 1:
"Shemen-tso from Camp 320," drawn on 4 February 1908 [detail]. To indicate the progressive desiccation of western Tibet, Sven Hedin drew the receding shorelines of Shemen-tso Lake (elevation: 4,960 m). Sven Hedin, *Southern Tibet Prospectus* (Stockholm: Lithographic Institute of the General Staff of the Swedish Army, 1922). Colored panorama taken from *Southern Tibet,* vol. 4, pages 240a and 240b. Photo courtesy of the Sven Hedin Foundation of the Royal Swedish Academy of Sciences.

Basis of History, not only was climate changing, but this change was global.[23] He rejected Hedin's notion of oscillation, which assumed that wind erosion alone could alter local topography.[24] Due to its wide generalizations (e.g., "with every throb of the climate pulse, which we have felt in Central Asia, the center of civilization has moved this way or that"[25]), *The Pulse of Asia* was poorly reviewed in London. Huntington demanded in vain that observations on lake elevations be connected to a thesis on climate change.[26] Unanswered, his question remained open for a while: was climate changing, and could we find an answer in the mountains and high plateaus of Asia?[27] In the winter of 1914, Prof. John Walter Gregory wondered aloud if the Earth was drying up.[28] By 1930 Gregory

23 Ibid., 365.
24 Ellsworth Huntington, "Lop-Nor. A Chinese Lake. Part II. The Historic Lake (Lop-Nor)," *Bulletin of the American Geographical Society* 39, no. 3 (1907): 141; Huntington, *The Pulse of Asia: A Journey in Central Asia Illustrating the Geographic Basis of History* (Boston: Houghton and Mifflin, 1907).
25 Huntington, *Pulse of Asia,* 385.
26 Ellsworth Huntington, review of *Trans-Himalaya: Discoveries and Adventures in Tibet,* by Sven Hedin, *Bulletin of the American Geographical Society* 42, no. 3 (1910): 217.
27 Thomas H. Holdich, review of *The Pulse of Asia,* by Ellsworth Huntington, *The Geographical Journal* 33, no. 4 (1909): 490–91.
28 John Walter Gregory, "Is the Earth Drying Up?," *The Geographical Journal* 43, no. 2 (1914): 148–72; no. 3, 293–318; no. 4, 451–59; and no. 6, 705–6.

had come to believe that the Altai Mountains were undergoing a progressive climate change and not a cyclical one.[29]

5. Significance

Welcomed as heroes, Sir Sven Hedin and Sir Aurel Stein were awarded Gold Medals by the RGS for their unexpected and carefully mapped discoveries of ancient Asia.[30] That said, academic Europe did not hide its prejudices about colonial Asia and the time-honored belief regarding the indolence of its populations.[31] Many scientists in Edwardian Britain, Wilhelmian Germany, and Belle Époque France viewed with dismay the ad hoc organization of explorers' expeditions, their political agendas, and the attention they enjoyed in the media and from the general public. Away from the field, the interpretation of maps, images, photographs, columns of figures, sketches, and landscape watercolors presented a challenge to reviewers. The entanglements of text and image, and of the scientific and artistic renditions of the landscape, were seen with disdain as not scientific enough; what could not be measured was often left out from the map (fig. 2). Even when they were meticulously documented, places located at the heart of Eurasia and therefore at the periphery of the British Empire were rarely considered as centers of credible scientific production.

Conclusion

Comparing pre-1914 challenges in mountain fieldwork to today's challenges could be done by situating in a wider context the relationship between geography, field methods, funding agencies, academic networks, and the equivalent to membership in the Hakluyt Society. The story of how we have forged our consensus on climate will remain incomplete as long as we ignore the contributions made by the scholars who carefully surveyed the desolate highlands of Asia and whose results we have silenced. Freeman Dyson asserted that the best way to understand science is to study the individual human

29 Reginald C. F. Schomberg, "The Climatic Condition of the Tarim Basin: Discussion," *The Geographical Journal* 75, no. 4 (1930): 320–23.

30 Philippe Forêt, *La véritable histoire d'une montagne plus grande que l'Himalaya: Les résultats scientifiques inattendus d'un voyage au Tibet (1906–1908) et de la querelle du Transhimalaya* (Paris: Bréal, 2004), 115–27.

31 François Herbette, "Le problème du dessèchement de l'Asie intérieure," *Annales de Géographie* 23, no. 127 (1914) : 1–30.

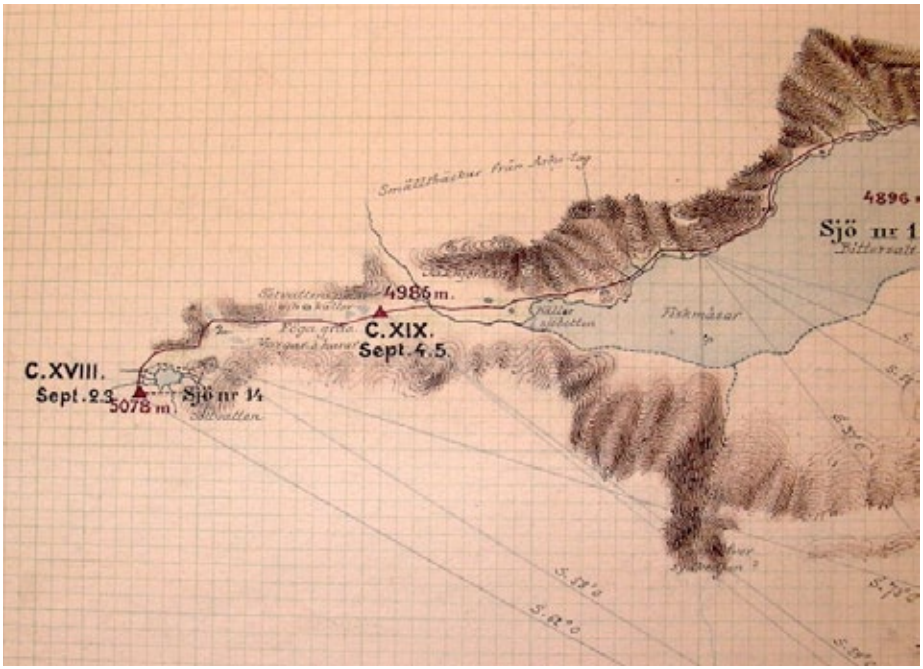

Figure 2: Detail of the untitled map draft made by C. J. O. Kjellström to illustrate the route along two unnamed lakes taken by Sven Hedin 2–8 September 1896. Initial data is checked, revised, and may be deleted as map editing progresses. The final sheet by H. Byström is accurate but may not convey information relevant to climate change. Sven Hedin, unpublished manuscript map of "From Camp Dalai-Kurghan to Camp XXXVI," and Sven Hedin, *Scientific Results of a Journey in Central Asia, 1899–1902* (Stockholm: Lithographic Institute of the General Staff of the Swedish Army, 1904–1907), vol. 8, sheets 80 and 81. Photo courtesy of the Sven Hedin Foundation of the Royal Swedish Academy of Sciences.

beings who practice it.[32] Dyson's comment can serve as a starting point if we wish to weave together personal memoirs, unpublished field notes, private letters and diaries, and maps and sketches, as well as scientific articles and public lectures.[33] As a genre, biographies, be they of individuals (Aurel Stein and Sven Hedin), of institutions (the RGS), or of concepts (climate pulse), offer a compelling way to present the emergence of theories, techniques, and practices.

The link between mountain lakes, weather patterns, societal collapse, and dramatic population decreases in the lowlands has been evidenced by recent techniques that have confirmed multi-centennial fluctuations—the isotopic analysis of stalagmites, for instance.[34] Such a link was first deducted using crude techniques that involved mules, chronometers, compass bearings, and drafting tables; these were part of the

32 Freeman Dyson, "The Scientist as Rebel," *The American Mathematical Monthly* 103, no. 9 (1996): 800–5.
33 Philippe Forêt et al., *La Haute-Asie telle qu'ils l'ont vue: Explorateurs et scientifiques de 1820 à 1940* (Geneva: Olizane, 2003). See also: Forêt, *La véritable histoire.*
34 Pingzhong Zhang et al., "A Test of Climate, Sun, and Culture Relationships from an 1810-Year Chinese Cave Record," *Science 322* (2008): 940–42.

systematic acquisition of knowledge that surveying methods would validate. We may better understand the history of knowledge about earth systems by examining how explorers tried to squeeze their findings into preconceived notions of what geography, mountains, and Asia ought to be. We would need a plain description of the concepts, techniques, values, and esprit de corps that have jointly influenced local fieldwork and global theorizing. This would help us address the challenges raised a century ago and in our own day, as we try to assess results from the field.[35]

35 For their generous assistance, I would like to express my thanks to Håkan Wahlquist and Staffan Rosén (Sven Hedin Foundation). A first draft of this paper was read on 20 August 2013 to the participants of the "Mountains across Borders" ESEH Summer School in Lavin, Switzerland, whose comments were encouraging. This paper expands on "The 21st Century Sven Hedin: Today's Assessment of Past Topographical Surveys in Central Asia" (Swedish Society of Geography and Anthropology meeting, Stockholm: 2013), and on "Climate Change: A Challenge to the Geographers of Colonial Asia" (*RFIEA Perspectives*, no. 9, http://rfiea.fr/articles/climate-change-challenge-geographers-colonial-asia), an article I wrote at the Institute for Advanced Study of Nantes.