



# Decolonizing technoscience in northern Scandinavia: the role of scholarship in Sámi emancipation and the indigenization of Western science



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## Abstract

The historical geography of the sub-arctic homeland of the Sámi indigenous people is characterized by its division among four nations across Scandinavia and the Kola Peninsula of north-western Russia. The aim of this article is to improve the understanding of Sámi contributions to Western scholarship and science by discussing their history and epistemological complexity. The Sámi provided many types of knowledge as abused, peaceful subjects of colonial study. However, with time they became learned agents able to appropriate, develop and modify Western scholarship and science. The Sámi experience of destructive national school policies motivated political action by articulate Sámi leaders at the beginning of the 20th century. Given the growing acknowledgment of Sámi socioeconomic interests in Scandinavia since the 1980s, disputes and consensus-building are a continuing part of the Sámi's co-existence with the majority society and academia. A specific Sámi research agenda and stable Sámi academic institutions are crucial for continued Sámi contributions to the indigenization of Western scholarship. Nevertheless, given its history and the instrumental character of Western science, it is argued that using science as the norm in any interaction with traditional knowledge is highly problematic. For joint research to benefit from both types of knowledge, the rigid methodology and reductionist worldview of Western science must first be recognized and analyzed in terms of Western science's epistemological dogmas, hegemonic practices and funding peculiarities. Improved insights in the history of science facilitate a critical development of indigenous knowledge combining actively chosen adaptations of science and technoscience with traditional knowledge.

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The application of Western science in different geographical settings reveals its alliances with, dependence on, and clashes with other knowledge systems. Field research does much more than provide science with various collections, inventories and datasets and offer testing grounds for full-scale empirical verification of scientific theories. Given the extramural setting of field research and its necessary invocation of a range of spatial techniques it requires an intricate combination of logistical methods, observational norms, and knowledge enactments that together constitute what is called technoscience.

The concept of technoscience was developed to emphasize the interrelations among laboratory science, society, the material world and history.<sup>1</sup> In this essay, the social sciences and the humanities

are seen as integral to technoscience because they have both contributed to the collection of information during field expeditions and been drawn upon for information by scientific travelers. The fieldwork of academic professionals in the Polar Regions has been and is dependent on their training, experience, special assistance and funding, but technoscience in the field is an evolving intellectual and material culture comprising spatial and bodily practices that become modified by the physical and human challenges posed by Westerners by the non-scientific and often non-Western residents of the high north.

The goals and methods of field science have transformed over time.<sup>2</sup> Beginning with the Western exoticism of the 18th century

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<sup>1</sup> S. Sismondo, *An Introduction to Science and Technology Studies*, Malden, 2008; D. Ihde, E. Selinger (Eds), *Chasing Technoscience: Matrix for Materiality*, Bloomington (IN), 2003.

<sup>2</sup> The development and socio-political uses of field science have been analyzed contextually in the history of science in recent decades; among these studies can be mentioned the special volume of *Osiris* in 1996: H. Kuklick, R.E. Kohler (Eds), *Science in the Field*, *Osiris* 2nd series 11 (1996); M. Bravo, S. Sörlin (Eds), *Narrating the Arctic: A Cultural History of Nordic Scientific Practices*, Canton (MA), 2002; D.N. Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge*, Chicago, 2003. For a historiographical overview, see D.A. Finnegan, The spatial turn: geographical approaches in the history of science, *Journal of the History of Biology* 41 (2008) 369–388.

and continuing with the wilderness romanticism of the early 19th century, field research was inspired by Humboldt's commitment to inventory and quantification and developed into an instrument of central importance to colonialism.<sup>3</sup> This essay focuses on a set of issues raised by the specific processes through which technoscience in northern Fennoscandia exploited but over time was partly altered by the indigenous population of the area, the Sámi people. For the sake of allegorical illustration, one may consider a bandwagon of colonial technoscience and behold its use against the aboriginals of the arctic regions.<sup>4</sup> In some places such as northern Scandinavia, it was redeployed by native scholars. Where this occurred, colonial technoscience contributed to research that affirmed Sami practices and underpinned emancipatory agitation. Moreover, the opening to indigenous scholars of higher education and careers in research raised several important questions about the epistemology of science and scholarship.

This article considers how technoscience was first used against the Sámi indigenous people and the long process by which they appropriated scholarship to revive their culture, analyze their present conditions and attain certain self-governing rights within Norway, Sweden, Finland and Russia. The role of scholarship and science in the various policies directed against the Sámi will be exemplified mainly from those portions of the Sámi homelands that are today part of northern Norway and Sweden. We also discuss some problems associated with the de-colonization and indigenization of Western knowledge based on the sociology of science and post-colonial studies of technoscience.<sup>5</sup> The second half of the paper considers some of the challenges involved in decolonizing technoscience and discusses its relation to traditional knowledge, and to today's composite indigenous knowledge. Efforts to indigenize Western science and scholarship respond to its insensitive application to so-called peripheral regions of the world but they also have paradigmatic implications as they expose the acute epistemological difficulties of merging indigenous knowledge with reductionist science (Fig. 1).

### The wider issue at stake

The history of technoscience raises several questions about the flexibility and neutrality of Western science and scholarship. Does use of the 'instruments' of Western research require that practitioners be acculturated into the 'Way of the West'? If so, conducting field science would be part and parcel of an unmistakably Western suite of ideas and priorities. Since the inception of modern science, it has been both argued and shown that science includes a set of norms and a certain worldview that has been characteristic of Western culture since the Enlightenment. Among the fundamental concepts of Western science are the Cartesian split between mind and body. The methodological goals of Western science include reductionism, objectivity, scepticism, empiricism, replication, quantification, mathematical abstraction and calculus, precision, standardization, and the accumulation of de-individualized



**Fig. 1.** A Sámi becoming an object of Western research. The Swedish medical doctor and racial anthropologist Gustaf Retzius (1842–1919) about to perform skull-size measurements on a South Sámi man, known here by his surname Fjellstedt. This studio photo was arranged in the late 19th century on Retzius' initiative to further his status as an expert in racial science. Source: Wikimedia Sweden.

knowledge. Its norms comprise, among others, secularization, idealism, evolutionism, individualism and the commoditization of nature but also freedom of speech, equality among scientific peers, transparency, meritocracy and democracy.<sup>6</sup> The point is not whether real scientific work meets these norms but that these norms define what is attempted and identified as technoscience by delineating it from other knowledge systems with socio-economic and material ambitions. Because technoscience is dependent upon this ideology, practitioners of non-Western background risk losing their native worldview as they embrace its principles.

If technoscience were a tool-box containing flexible, neutral and somehow superior instruments, people could use what they needed from it for their 'own' purposes, and the full decolonization of technoscience might be possible. But this possibility raises two questions: what competence is needed to use those instruments successfully, and why would anyone who is not Western want to use Western science? Beyond this there lies the sense that many outside the Western world, desire to master technoscience in order

<sup>3</sup> S. Zeller, Classical codes: biogeographical assessments of environment in Victorian Canada, *Journal of Historical Geography* 24, 1 (1998) 20–35.

<sup>4</sup> This allegorical expression is invoked by the present authors, but for a discussion of the clash between Western science and traditional knowledge in Arctic North America, see D.J. Gamble, Crushing of cultures: Western applied science in northern societies, *Arctic* 39 (1986) 20–23.

<sup>5</sup> Sismondo, *An Introduction to STS* (note 1); W. Anderson, Introduction: postcolonial technoscience, *Social Studies of Science* 32, 5–6 (2002) 643–658; S. Fuller and J.H. Collier, *Philosophy, Rhetoric, and the End of Knowledge: A New Beginning for Science and Technology Studies*, Mahwah & London, 2004.

<sup>6</sup> Recent studies in the sociology and history of modern science have demonstrated its Western cultural ladenness. This is not to say that the roots of science are all European — quite the opposite is true — or that it has been developed ever since its beginnings only in the West. S. Harding, Is science multicultural? Challenges, resources, opportunities, uncertainties, *Configurations* 2 (1994) 301–330; S. Gaukroger, *The Emergence of a Scientific Culture: Science and the Shaping of Modernity 1210–1685*, Oxford, 2006; A. Bala, *The Dialogue of Civilizations in the Birth of Modern Science*, New York, 2006; T.E. Huff, Some historical roots of the ethos of science, *Journal of Classical Sociology* 7 (2007) 193–210; J. Golinski, *Making Natural Knowledge: Constructivism and the History of Science*, Cambridge, 1998.

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