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# Entangled Environments: Historians and Nature in the Nordic Countries

**Av Finn Arne Jørgensen, Unnur Birna Karlsdóttir, Erland Mårald, Bo Poulsen og Tuomas Räsänen**

*This article discusses recent developments in*

**English abstract p 164**

*Nordic environmental history scholarship in light of the concept of the Anthropocene. Taking concepts of nature and culture as entangled with each other, the article explores questions of definition, disciplinary knowledge and the need for interdisciplinarity, and the problem of national, spatial, and temporal boundaries in environmental history. Both natural spaces and the scientific knowledge we have about nature need to be historicized. The article concludes with a look to the future of Nordic environmental history.*

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**E**NVIRONMENTAL HISTORY begins with the end of Nature.

Behind this admittedly provocative statement lies a growing realization that what we often think of as natural environments are in fact environments entangled with culture, politics, technology, and other human activities, across time and space.<sup>1</sup> Over the past 40 years in particular, the humanities, the social sciences, and the natural sciences have increasingly engaged in inter-, cross-, multi-, and transdisciplinary conversation about the state of the environment and our role in and responsibility<sup>22</sup> for nature. These conversations have global perspectives, combining long and short historical time-lines with pressing contemporary concerns, and have surfaced in different versions in many academic disciplines, including history.

Environmental history reflects the general trend in these conversations in questioning the idea of a Nature separate from man. Instead, the field highlights the entangled connections between the natural and the cultural, bringing nature and history together in intriguing and often unexpected ways. Environmental history developed as a discipline to bring history back into the stories we tell about nature, and to simultaneously place nature in the stories we tell about culture. It is what we can call a hybrid discipline, combining methods and approaches from both the natural sciences and the social sciences, but not always in unproblematic ways.

Much environmental history writing has been fundamentally pessimistic, lamenting the loss of what was once natural and unpolluted by human activities. In this perspective, environmental change becomes an inevitable decline towards catastrophe. This concern served as a powerful catalyst in the early development of environmental history, as the field grew out of environmentalists' and activists' interest in preserving and protecting nature, but contemporary studies in the field are increasingly distancing themselves from this idea of nature as something originally pristine and outside the human realm. Environmental history has thus taken the end of Nature as its starting point in more than one way.

This is what it means to live in the Anthropocene, the geological age shaped by human activity at ever-accelerating speed: there are no

1. W. McKibben, *The End of Nature*, New York, 1990; S. Sörlin & P. Warde, *Nature's End: History and the Environment*, Chippenham & Eastbourne 2009; D. Worster (ed.), *The Ends of the Earth: Perspectives on modern environmental history*, Cambridge 1988.

untouched places left on Earth.<sup>2</sup> Human activity has shaped the world in both obvious and more invisible ways, and environmental history has come to excel at highlighting these entangled connections between the global and the local, between the «natural» and the «cultural.» We cannot properly understand the causes and effects of global climate change without such perspectives. Acid rain stemming from British smoke stacks has polluted Nordic forests; radioactivity from Chernobyl register in Sami reindeer; emissions from our car-centered societies are melting Polar ice; European-produced insecticides from African farms are showing up in Northern American lakes. Writing history in the Anthropocene implies by necessity the crossing of boundaries: between nature and culture; humanities and natural sciences; the academy and the public sphere; the local and the global; the past, present, and future. In the humanities, this development has increasingly been interpreted as a call for relevance, of demonstrating the immediate usefulness of a humanistic perspective to society at large. But the role of environmental history is not always to provide neat answers and untangled perspectives; rather, the re-entangling of historical narratives can be just as important.

This article seeks to examine the state of Nordic environmental history scholarship seen through the lens of entangled environments. Rather than attempting to provide a coherent and intellectually consistent definition of the field, or a complete overview of every historian that ever wrote about nature, we examine three «entanglements» within what can broadly be construed as Nordic environmental history after a brief discussion of the institutional context of environmental history in Nordic countries. In doing so, we explore what environmental history – Nordic or otherwise – can teach us about the need to cross boundaries in scholarly analyses of historical and contemporary phenomena.

Since environmental history is a discipline that has developed as a result of the broad and varied concerns of a wide range of scholars across the world, there is no clear definition of what «environment» really means, though not for a lack of attempts to define it.<sup>3</sup> In our view, environmental history can best be described as a «big tent» discipline, with room for many approaches and interpretations. As Douglas Weiner points

2. P. J. Crutzen & E. F. Stoermer, The «Anthropocene», *Global Change Newsletter* 2000, 41: 17–18; J. Zalasiewicz, et al., The New World of the Anthropocene, *Environment, Science, and Technology* 2010, 7: 2228–2231; W. Steffen, P. J. Crutzen, & J. R. McNeill, The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature, *AMBIO: A Journal of the Human Environment* 2007, 8: 614–621.

3. D. Weiner, A Death-defying Attempt to Articulate a Coherent Definition of Environmental History, *Environmental History* 2005, 3: 404–420

out, this creates serious boundary problems.<sup>4</sup> For instance, scholars who engage in historiographical discussions that could be labeled as environmental history may not apply that label to their own work. We have chosen to bring the big tent along on this trek through Nordic environmental history, not wanting to draw too strict distinctions between the disciplines and nationalities of scholars engaging in historical studies of Nordic environments.

One can of course take stock of the field in many ways; the boundaries and entanglements that we have chosen to focus on are certainly not the only ones possible. The scholarship that goes on here is not merely a reflection of what goes on elsewhere, but neither did it develop independently of international trends. We do not attempt to produce a catalog of research projects or a complete bibliography. Instead, we have chosen to look for some overarching themes and good examples of Nordic environmental history scholarship to discuss what the implications are for history writing when nature enters the discussion. We contend that environmental history has remained more on the fringes of Nordic academia than the field has in the North American context, while at the same time observing that this is beginning to change. We have chosen to look forward as much as backward, examining general trends in Nordic environmental history and pointing out some possible ways and approaches for developing the field further.

#### ENVIRONMENTAL HISTORY AS A DISCIPLINE IN THE NORDIC COUNTRIES

How has the historical study of the environment become institutionalized in university departments, teaching programs, and professional organizations? While individual historians have been examining nature and the environment for a long time, environmental history developed as a distinct historical sub-discipline only in the late 1960s. The first attempt to get an overview of the environmental history field was an article published in 1970 by Roderick Nash.<sup>5</sup> Two years later, the *Pacific History Review* dedicated a theme issue to environmental history. The activist and environmentalist backgrounds of these early environmental historians influenced their work, which generally focused on issues such as conservation, irrigation, national parks, wilderness, and environmental politics.<sup>6</sup> A significant number of bibliographic overviews published in the

4. Ibid: 415.

5. R. Nash, Environmental History, in H. J. Bass (ed.), *The State of American History*, Chicago 1970.

6. *Pacific Historical Review* 1972, 5.

past 15-20 years demonstrate how diverse the interests of environmental historians have grown since then.<sup>7</sup> Most of these overviews have focused on American, and to a lesser degree European, scholarship, but a few have made similar bibliographic overviews for the Nordic countries. However, most of these essays focus on national contexts rather than the Nordic countries as a larger region.

Historians certainly haven't lacked opportunities to start larger conversations about Nordic environmental history. When the XXI Congress of Nordic Historians met in Umeå in 1991, the conference theme was «Man and the Environment» («Människan och miljön»). In Lars J. Lundgren's Preface to the conference proceedings, he called for Nordic environmental historians to unite: «Meet, exchange thoughts and ideas, plan and carry out collaborative research projects!»<sup>8</sup> Subsequent Nordic environmental history conferences in Linköping in 1995, Karlstad in 1997, Lund in 1999, Umeå in 2002, Malmö and Copenhagen in 2004, and Turku in 2005 have resulted in several conference volumes, but only a few in English.<sup>9</sup> In 2004 the Danish Research Council for the Humanities published a report reviewing the state of environmental humanities in Denmark, revealing the production of almost 700 publications (1993–2002), but also a fairly atomized scholarly environment dependent on the efforts of a small number of people.<sup>10</sup> A fair number of environmental history dissertations have been produced, mostly in Scandinavian languages in departmental publication series and thus effectively invisible to the English-speaking world. It seems, however, that more recent publications aim to be accessible to an international audience. For instance, a small English-language volume produced for the first World Congress of Environmental History in Copenhagen and Malmö in 2009 highlighted

7. M. Cioc, B.-O. Linnér & M. Osborn, Environmental History Writing in Northern Europe, *Environmental History* 2000, 3: 396-406; J. R. McNeill, Observations on the Nature and Culture of Environmental History, *History and Theory* 2003, 4: 5-43; A. Rome (ed.), Anniversary Forum: What's next for environmental history?, *Environmental History* 2005, 10: 30-109; V. Winiwarter et al., Environmental History in Europe from 1994 to 2004: Enthusiasm and Consolidation, *Environment and History* 2004, 4: 501-530.

8. L. J. Lundgren (ed.), *Människan och miljön*, Historiska institutionen, Umeå 1991: 8-9.

9. M. Johansson (ed.), *Miljöhistoria idag och imorgon. Rapport från en miljöhistorisk konferens vid Högskolan i Karlstad 9-10 april 1997*, Karlstad 1998; E. Mårald & C. Nordlund (eds.), *Värna, vårda, värdera: Miljöhistoriska aspekter och aspekter på miljöhistoria*, Umeå 2003; F. Björk, P. Eliasson & B. Fritzboeger (eds.), *Miljöhistoria över gränser*, Malmö 2006, [http://www.envirohist.org/material/mhistantol\\_hela.pdf](http://www.envirohist.org/material/mhistantol_hela.pdf); T. Myllyntaus (ed.) *Thinking Through the Environment: Green approaches to global history*, Isle of Harris 2011.

10. P. Holm, et al., *Humanistisk Naturforskning: Omverden, Individ og Samfund*, København 2004, <http://www.fi.dk/publikationer/2004/humanistisk-naturforskning-omverden-individ-og-samfund/humanistisk-naturforskning-omverden-individ-samfund.pdf>; B. Poulsen, *Bibliografi for humanistisk naturforskning i Danmark 1993-2002*, [www.cmrs.dk](http://www.cmrs.dk)

local environmental histories from the Øresund region;<sup>11</sup> a forthcoming volume from a workshop arranged by the Nordic Environmental History Network in 2010 examining how technologies make northern environments will be published by a major Canadian university press.<sup>12</sup>

A recurrent theme in many of the overview articles is the anticipation of a breakthrough in environmental history starting in the 1970s with the rise of the environmental movement, but it never materialized. Environmental history has not quite gained a foothold in academic settings in Nordic universities. One exception was history professor Birgitta Odén, who in 1969 set up a research group called «Nature and Society 1850–1970» at Lund University, inspired by contemporary Swedish environmental debates. In 1974 Lars Lundgren defended his doctoral dissertation in history about the debate on water pollution around the year 1900.<sup>13</sup> It took until 1993, however, before Umeå University appointed Sverker Sörlin as Sweden's first chaired professor in environmental history. Since then, a few dedicated positions have been established, such as one associate professorship in environmental history at Aalborg University and several tenure-track positions in Umeå, but most Nordic scholars working within environmental history are employed in other sub-disciplines. Finland has numerous scholars working within environmental history but lacks institutional basis. Denmark has gradually developed a very strong presence in marine environmental history and forest history. Norway and Iceland are surprisingly weak, at least institutionally. In the case of Norway, several scholars interested in environmental history have ended up moving elsewhere to find academic positions.<sup>14</sup> The institutionalization of environmental history seems to be changing as a result of the activities of both individual scholars with significant international presence and the Nordforsk-funded Nordic Environmental History Network (NEHN). Since 2008, this network has enabled sustained conversation about the identity, possible roles, and working conditions of Nordic environmental historians through a series of international workshops and joint projects, including the one that resulted in this article.

11. F. Björk, P. Eliasson & B. Poulsen (eds.) *Transcending Boundaries: Environmental histories from the Øresund region*. Skrifter med historiska perspektiv, volym 9. Malmö 2009.

12. D. Jørgensen & S. Sörlin (eds.) *Northscapes: History, Technology, and the Making of Northern Environments*. Vancouver, forthcoming 2013.

13. L. Lundgren, *Vattenförening: Debatten i Sverige 1890-1921*, Lund, 1974.

14. A 2008 theme issue of *Fortid* asked if environmental history had a future in Norway, pointing to fragmentation and lack of institutional support. *Norsk miljøhistorie – motgang, mangfold og muligheter*, *Fortid* 2008, 4.

## FIRST ENTANGLEMENT: DEFINING NATURE

The first entanglement of environmental history can be found in the issue of representation: what are we really talking about when we talk about nature? Who gets to speak for nature, and based on which disciplinary concerns? How do we even define nature and environment (or for that matter, society)? Such questions are fundamentally historical, and thus difficult to answer without simultaneously considering the actors we study and the disciplinary and institutional contexts in which we attempt to study them.

Let us begin with a seemingly basic question: What is environmental history? Several generations of environmental historians have attempted to define the limits and ambitions of their inquiries through answering this question. The pioneering Swedish environmental historian Birgitta Odén pointed out in an early overview article that environmental history did not belong to any particular discipline, but instead should be an aspect or ecological conscience permeating all research at the university.<sup>15</sup> At its most basic level, environmental history is concerned with the interaction between humans and their environment in a historical perspective. This environment – whether called nature or something else – is more than just the physical backdrop for human activities. Environment matters for the way our societies function, in the past, present, and future. The perspectives of environmental history highlight the connections between seemingly disparate natural and cultural phenomena, such as fish and energy systems, insects and war, and forests and urbanization.<sup>16</sup>

When environmental history developed as a separate historical discipline in the US in the 1960s and 1970s, the history of environmental ideas quickly gained a pivotal position. Periods of dramatic environmental change gave rise to new attitudes towards nature. At the same time, ideologies and mentalities persistently change. A long-held view has been that Western civilization became particularly hostile towards non-human nature during the early modern period, and this, along with the industrialization process, has been seen as the seed of the current environmental crisis. However, historians of environmental ideas have found that the

15. B. Odén, *Människan och miljön: historiografiska traditioner och trender*, in Lundgren 1991: 27-45.

16. R. White, *The Organic Machine: The Remaking of the Columbia River*, New York 1996; E. Russell, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring*, Cambridge 2001; W. Cronon, *Nature's Metropolis: Chicago and the Great West*, New York 1991.



concept of nature has never been singular, but rather has been contested for centuries. The appreciation and reverence of nature were not unfamiliar sentiments of early modern thinkers, for instance, and these ideas, too, spread through the continent via the republic of letters.<sup>17</sup> In the Nordic countries, the history of environmental ideas has been particularly dominant in Sweden, and Sverker Sörlin's studies on the subject are known to the wider community of historians as well as the reading public.<sup>18</sup>

The shifting concerns of environmental historians over time reveal that it is hard to talk about nature and environment without considering the numerous translations and mediations that take place in simply defining what we mean by these terms. The words «nature» and «environment» are not stable. Their meaning changes over time, reflecting shifts in usage, in our understanding the phenomena they refer to, and in nature itself. They are not synonymous, even though they are often used interchangeably in daily use. An increasingly common set of definitions considers «nature» as the physical world «out there,» without any humans in the picture, while «environment» is what we get when humans and nature interact. There is also a hierarchy at work; «nature» is the purest state, connoting wilderness and authenticity, whereas the human presence implied in «environment» often involves some kind of loss or degradation.

Not surprisingly, then, do environmental historians often have a complicated relationship to nature as a concept. When William Cronon challenged the notion of wilderness as an absolute baseline and moral goal for environmental historians in a famous article in 1995, he upset many activist historians. By stating that wilderness no longer existed as a natural environment unaffected by man, he seemed to challenge the very core of environmental history as a discipline.<sup>19</sup> How could environmental historians criticize development, expansion, and industrialization in natural areas, without the idea of wilderness and untouched nature as the guiding principle? Instead, historians found nature crowded with intentions, ideals and ambitions from nationalism, progressivism, technocratic policies, political

17. K. Väyrynen, *Ympäristöfilosofian historia maaäitimyytistä Marziin*, Tampere 2006.

18. See for example, S. Sörlin, *Naturkontraktet. Om naturungängets idéhistoria*, Stockholm 1991; S. Sörlin & A. Öckerman, *Jorden en ö. En global miljöhistoria*, Stockholm 2002.

19. W. Cronon, The Trouble with Wilderness; or, Getting Back to the Wrong Nature, in W. Cronon (ed.), *Uncommon Ground: Rethinking the Human Place in Nature*, New York 1995: 69-90.

theories, and other ideologies, as well as concrete projects in nature conservation and exploitation.<sup>20</sup>

In the Nordic countries, wilderness remains a strong ideal owing to the relatively large areas of mostly uninhabited nature.<sup>21</sup> For instance, the large central highland of Iceland is uninhabitable, but in recent decades this area has been at the center of a harsh debate about hydropower projects.<sup>22</sup> This is a good reminder that so-called sustainable energy production is not without costs and controversies from an environmental point of view.<sup>23</sup> The northern districts of Norway, Sweden and Finland still have uninhabited or sparsely populated areas that are like islands in the surrounding cultural landscape, though as Berntsen and Hågvar have argued, islands that are rapidly disappearing.<sup>24</sup>

Environmental history scholarship on the human presence in nature has led to new words such as «envirning,» which is the portrayal of historical processes in which humans domesticate nature and of the mutual shaping that follows.<sup>25</sup> Terms like *envirning* are useful when highlighting the entanglements of environmental histories. If we consider nature as something separate from the rest of society, historians don't need to concern themselves with it; nature is the realm of natural scientists or historical ecologists. It follows that proper history should be concerned with human affairs, with war, politics, nation-states, and social developments. However, when we give up the idea of a Nature without humans, as a separate sphere external to society, the environment becomes central in history.

In our view, environmental history is history proper, concerned with understanding the complex interactions of historical actors in the past. At the same time, environmental history aims to draw nature into the realm

20. On the history of the clash between preservation and exploitation of wilderness areas in Sweden, see, for example, S. Sörlin, *Framtidslandet. Debatten om Norrland och naturresurserna under det industriella genombrottet*, Malmö 1988, and A. Lehtinen, *Northern Natures: A Study of the Forest Question Emerging within the Timber-Line Conflict in Finland*, Helsinki 1991, on the case of Finnish Lapland. On the place of nature in Icelandic nationalism and the controversies over nature preservation and exploitation, see G. Hálfðanarson, «Hver á sér fegra föðurland.» Staða náttúrunnar í íslenskri þjóðernisvitund, *Skirnir* 1999, 2: 304–336.

21. See, for instance, B. Berntsen & S. Hågvar (eds.), *Norsk natur - farvel?* Oslo 2010.

22. On the battle for protection of the Icelandic «wilderness» of the central highland in Iceland, see U. B. Karlsdóttir, *Þar sem fossarnir falla. Náttúrusýn og nýting fallvatna á Íslandi 1900-2008*, Reykjavík 2010.

23. G. Hálfðanarson, Sustaining Economic Development or Preserving Nature? Environmental Politics in Iceland, in G. Bolin et al., *The Challenge of the Baltic Sea Region. Culture, Ecosystems, Democracy*, Huddinge 2005: 189–199.

24. Berntsen & Hågvar 2010.

25. D. Jørgensen & S. Sörlin, Making the Action Visible - *Envirning* in Northern Landscapes, in Jørgensen & Sörlin 2013.

of human history. What often sets environmental history apart from more traditional types of historical inquiry is thus a commitment to engage in the vocabulary of other disciplines, often within the natural sciences. Environmental history recognizes the role of human–nature interaction in what we often consider social, cultural, or political processes, at the same time as we emphasize the human place in nature; that «nature» is not something that can be untangled from human history.

#### SECOND ENTANGLEMENT: DISCIPLINARY KNOWLEDGE

The second entanglement is closely related to the first and concerns methodologies. We must not just ask who gets to speak for nature, but also how we can know about human–nature interactions. Within the big tent model of environmental history, a multiplicity of disciplinary methodologies entangle with each other. Environmental history can certainly operate well within an entirely mono-disciplinary framework, but it is often the engagement between knowledge production from within different disciplines that sets environmental history apart from more traditional strands in history. This does not imply that all environmental history research is characterized by interdisciplinarity. Instead, most environmental historians work in the same way as «regular historians» with ordinary historical methods and skills. However, this historical approach can still be important in bringing social, cultural and historical perspectives into environmental studies. For the past 50 years, the environment has been an almost exclusive territory for the natural sciences. Since environmental problems have evolved historically in different social and cultural contexts, we need to understand historical processes if we are to derive a broader and more complete understanding of environmental change. Studies of human interaction with nature often grow deeper and more nuanced by integrating multiple perspectives from various disciplines across the human and natural sciences. Environmental history in the Nordic countries provides several such examples. For instance, Simo Laakkonen cooperated with hydrologists in assessing the long-term development of eutrophication in the coastal waters off Helsinki.<sup>26</sup>

In order to truly contribute to discussions of environmental change, historians need to study what Timo Myllyntaus has called «the archives of nature» along with more traditional sources.<sup>27</sup> Dendrochronology, car-

26. T. Finni, S. Laurila & S. Laakkonen, The History of Eutrophication in the Sea Area of Helsinki in the 20th Century, *Ambio* 2001, 30: 4–5.

27. T. Myllyntaus, New Wine in Old Bottles? Traditions of Finnish Environmental History, in Mårald & Nordlund 2003: 177.

bon 14-dating, pollen analysis, and sediment studies are all examples of potential sources for environmental history, although not entirely unproblematic; we need to consider nature's archivists as well as the archives. Historians are well trained in critical studies of textual sources, but often not so capable of evaluating data from the natural sciences. This is true particularly when working with historical scientific data, but these sources need to be subject to the same standards of source criticism as other historical sources.

The historian Kristin Asdal, building on Bruno Latour and other scholars in science studies, has argued that social scientists and humanities scholars have been unwilling to engage in the knowledge production of the natural sciences, in effect leaving «nature» to the natural sciences, independently of culture and society.<sup>28</sup> Asdal's use of actor-network theory promotes a radical historicizing of nature. She calls environmental history (following Donald Worster's frequently used definition<sup>29</sup>) naïve from a theory of science point of view, by taking the natural history knowledge of nature for granted. Because nature does not leave written sources, it is always translated through others and consequently has to be subject to historical inquiry, where biological cycles, ecosystems, culture, and politics all fit within the same analytical framework.<sup>30</sup> The conversations that have taken place between environmental history and science studies have called for more sophisticated theoretical frameworks in environmental history research.<sup>31</sup>

Nordic historians have by no means been pioneers in reaching out to the natural sciences – archaeologists have much longer traditions in interdisciplinary research, having worked closely with soil science, chemical analyses, and so on for decades, making archaeology a particularly good resource for medieval environmental history.<sup>32</sup> Within social anthropology, too, there are long traditions in investigating the changing

28. K. Asdal, Miljøhistorie som politikk- og vitenskapshistorie. Franske forbindelseslinjer, *Nytt Norsk Tidsskrift* 2005, 3: 301-311; K. Asdal, The Problematic Nature of Nature: The Post-Constructivist Challenge to Environmental History, *History and Theory* 2003, 4: 60-74.

29. D. Worster, Doing Environmental History, in Worster 1989: 289-307.

30. K. Asdal, *Politikkens natur: Naturens politikk*, Oslo 2011; B. Latour, *Politics of nature: How to bring the sciences into democracy*, Cambridge, MA 2004.

31. D. Jørgensen, F.A. Jørgensen, & S. B. Pritchard (eds.), *New Natures: Joining Environmental History with Science and Technology Studies*, Pittsburgh, 2013; S. Sörlin and P. Warde, The Problem of the Problem of Environmental History: A Re-Reading of the Field, *Environmental History* 2007, 1: 107-130.

32. See, for instance, D. Jørgensen, Cooperative sanitation: Managing streets and gutters in late medieval England and Scandinavia, *Technology and Culture* 2008, 3: 547-567. The European Society for Environmental History awarded this article its publication prize in 2009.

relationships between man and nature. For instance, in the 1960s the Norwegian anthropologist Fredrik Barth won international acclaim for his studies of social organization in fishing communities, where the natural environment is integral.<sup>33</sup> In more recent decades, anthropologists such as Gísli Pálsson and Kirsten Hastrup, both working on Icelandic cases, have studied how people cope with the environment in coastal communities, and in the case of Hastrup with a great sense of temporal change.<sup>34</sup>

Cross-disciplinary collaboration often takes place when environmental historians use and interpret data generated within the natural sciences. Donald Worster, a pioneer in American environmental history, advocated this approach as long ago as in 1979 in his groundbreaking book on how the exploitation patterns in early 20th century American farming were partly responsible for the so-called Dust Bowl. In this disaster, many farmers became impoverished as a result of major dust storms and diminishing output from their land, a development that coincided with the Great Depression.<sup>35</sup> This was attributed partly to a «tragedies of the commons» phenomenon, after Garret Hardin's influential *Science* article on how rational decisions by self-interested individuals could deplete shared resources.<sup>36</sup> Decades later, Geoff Cunfer brought new tools and methods to the table when revising Worster's thesis by combining historical agricultural census data with GIS mapping. This allowed Cunfer to argue that land-use remained stable in the period before the Dust Bowl phenomenon.<sup>37</sup> Worster's insistence that culture, economy, and ecology had to be combined if we were to understand the ways in which we have historically exploited nature has still been incredibly influential in the field. For instance, the Finnish environmental historian Mikko Saikku published a history of nature exploitation and changing land-use patterns in the Yazoo-Mississippi Delta in the American South, but at the same time acknowledging the similarities between the environmental histories of North America, Finland, and Northern Europe in general.<sup>38</sup>

33. F. Barth, *Models of Social Organization*, London 1966.

34. G. Pálsson, *Coastal Economies, Cultural Accounts: Human Ecology and Icelandic Discourse*, Manchester 1991; K. Hastrup, *A Place Apart: An Anthropological Study of the Icelandic World*, Oxford 1998.

35. D. Worster, *Dust Bowl: The Southern Plains in the 1930s*, Oxford 2004.

36. G. Hardin, 'The Tragedy of the Commons', *Science* 1968, 162: 1243-1248.

37. G. Cunfer, *On the Great Plains: Agriculture and Environment*, College Station 2005.

38. M. Saikku, *This Delta, This Land: An Environmental History of the Yazoo-Mississippi Floodplain*, Athens, GA, 2005.

In Denmark, Worster's work was important in providing inspiration for Thorkild Kjærgaard's radical reinterpretation of historical Danish farming practices. He applied contemporary knowledge of soil systems, erosion and not least the impact of clover on fixating nitrogen in his study of the dynamics behind the Danish enclosure movement in the 18th and early 19th centuries. Kjærgaard found that Danish farming, and in turn the rest of society, suffered during the 17th and 18th centuries due to over-exploitation of the terrestrial ecosystem. He emphasized that the introduction of clover, and technological improvements through drainage was critical for the enclosure movement and subsequent modernization of Danish society.<sup>39</sup> Kjærgaard's work deserves to be credited as pioneering, due to its insistence that the availability of natural resources also played a decisive role in how Denmark evolved as a solar energy fueled society. His book generated both acclaim and controversy, particularly over the alleged over-reliance on environmental factors, in the Danish journal *Fortid & Nutid*.<sup>40</sup> Cambridge University Press published an English-language edition of the book in 1994.<sup>41</sup>

The resource-centred approach pioneered by Kjærgaard lies at the forefront of much of the work of Bo Fritzboeger on forestry and, recently, the Skjern Valley river system<sup>42</sup>, Carsten Porskrog Rasmussen on farming systems<sup>43</sup>, and not least Bjørn Poulsen and Nils Hybel's highly acclaimed *The Danish Resources c. 1000-1550: Growth and Recession*.<sup>44</sup> In Sweden, Janken Myrdal has contributed to a similarly marked modernization of agrarian history through his inclusion of soil qualities and climatic variation as a conditioning boundary in Swedish farming, for instance through estimates of maximum food production levels in pre-modern agrarian Sweden.<sup>45</sup>

39. T. Kjærgaard, *Den danske Revolution 1500-1800: en økohistorisk tolkning*, Copenhagen 1991.

40. *Fortid og Nutid* 1992, 1: 16-59.

41. Kjærgaard 1994.

42. B. Fritzboeger, *A Windfall for the Magnates. The Development of Woodland Ownership in Denmark c. 1150-1830*, Odense 2004. B. Fritzboeger, *Vandets veje: Skjern Ås miljøhistorie gennem 350 år*, København 2009.

43. C. R. Rasmussen, Godsejer magt eller naturtilpasning? De regionale mønstre i det slesvigske landbrug i 1700-tallet og deres sammenhæng med naturforhold og godssystemer, in P. Grau Møller & M. Svart Kristiansen, *Bygder: Regionale variationer i det danske landbrug. Fra jernalder til 2000*, Auning 2006.

44. B. Poulsen & N. Hybel, *The Danish Resources c. 1000-1550: Growth and Recession*, Leiden/Boston, 2007.

45. J. Myrdal, Food, war and crisis: The Seventeenth century Swedish Empire, in A. Hornborg, J. R. McNeill & J. Martinez-Alier, *Rethinking environmental history. World system history and global environmental change*, Lanham 2007.

Since forestry in Sweden and Finland has been very important for the modernization of these countries and their national identities, many environmental historians have investigated the history of forestry and social use of forest resources.<sup>46</sup> Per Eliasson, for instance, analyzed the introduction of German-inspired silvicultural ideas, methods and practices in Sweden in the 19th century, as well as the changes in nature and the social conflicts that this method brought with it. Traditional rights of forest usage were abolished, and instead new legislation, institutions and knowledge were established aimed at supporting a forestry focused on production of timber and, later, also pulp. This involved a shift in values. Old values connected with agricultural society were slowly exchanged for modern national economic and commercial outlooks. The discourses, policies, institutions, and practices established in Swedish forestry in the 19th century, and the resulting transformation of the forests, continue to shape Swedish forestry even today.<sup>47</sup>

Marine environmental history has become one of the interdisciplinary flagships of Nordic environmental history. The development of marine environmental history owes much to the recognition among marine scientists in the 1990s that in order to avoid the «shifting baselines syndrome» when trying to understand changes in marine ecosystems they needed longer time frames.<sup>48</sup> The time span covered by scientific surveys of a specific area or species often remains limited to less than 40 years, which means that fisheries scientists tended to evaluate ecosystem change based on short historical data series. What are the baselines we use to evaluate environmental change, and how are they established? Such questions have emerged also outside fisheries science. Environmental history has led the way in questioning the presupposed purity of nature as a baseline to work from, an insight that is currently much debated in the ecological sciences. Such fundamentally historical questions have become particularly relevant in ecological restoration and animal reintroduction projects.<sup>49</sup>

46. J. Korkeasaari & K. Tarkiainen, *Suomalaiset Ruotsissa*, Turku 2000, 45–62; I. Björn, Takeover: the Environmental History of the Coniferous Forest, *Scandinavian Journal of History*, 2000, 25: 281–296.

47. P. Eliasson, *Skog, makt och människor*, Malmö 2002.

48. D. Pauly, Anecdotes and the shifting baselines syndrome of fisheries, *Trends in Ecology & Evolution* 1995, 10: 430.

49. M. Hall (ed.), *Restoration and History: The Search for a Usable Environmental Past*, London 2010; E. Marris, *Rambunctious Garden: Saving Nature in a Post-Wild World*, New York 2011; D. Jørgensen, What's history got to do with it? A response to Seddon's definition of reintroduction, *Restoration Ecology* 2011, 19: 705–708

The fisheries scientists who have worked most extensively on historical data series do not define their work as «environmental history» but rather as «historical ecology.» Their research questions center more on understanding the «nature» side of human–nature interaction than the human side of the story. When Poul Holm, then professor at the University of Southern Denmark, launched the History of Marine Animal Populations (HMAP) project, which ran from 2000 to 2010, his ambition was to establish much longer baselines for marine animal populations, and to add human society more prominently to the equation than the historical ecologists had done.<sup>50</sup> Previous maritime history had studied fisheries and various perceptions of the sea and how these changed over time, but the ocean itself was generally seen as a constant factor. While the project team was global, a large Danish component contributed to its success, mainly through investigations of past Scandinavian fisheries in the North Sea and Baltic Sea. For instance, René Taudal Poulsen's study of the Swedish west coast fisheries in the 19th century revealed that, even in the age of sail, fishermen sailed further and further out to sea in order to maintain their catch levels, e.g. Bohuslän fishermen gradually moved as far away as the «Jäderen Ground» off the west coast of Norway. In addition, the average size of the fish caught gradually shrunk.<sup>51</sup> This was a particularly strong interdisciplinary study in which theories and mathematical models for estimating biomass levels developed within marine science were transformed into a historical context where archival sources as well as qualitative evidence concerning the fisheries aided in interpreting the bio-statistical findings.

In a study of the Dutch herring fisheries from 1600–1860 the interdisciplinary approach came to light through the use of port registers reconstructing the average catch per boat per fishing trip, and per day at sea – the so-called Catch Per Unit Effort (CPUE) – over a period of 250 years. The results, when compared with analyses of where fishing took place over a similarly long time period, revealed that while fishing effort in the 17th and 18th centuries did not pose a threat to the abundance of the fishing stock and the changing migration patterns of the fish, it did have a very significant impact on how the overall herring fisheries in Northern Europe developed for several centuries.<sup>52</sup> Taking stock – in 2010, more

50. P. Holm, T. D. Smith & D. J. Starkey, (eds.) *The Exploited Seas: New Directions for Marine Environmental History*, St. John's 2001.

51. R. T. Poulsen, *An environmental history of North Sea ling and cod fisheries, 1840-1914*, Esbjerg 2007.

52. B. Poulsen, *Dutch Herring. An Environmental History, c. 1600-1860*, Amsterdam 2008.



than 250 publications had been generated by the HMAP project,<sup>53</sup> which itself received much public attention and scholarly credit in the form of the cross-disciplinary «Danish Research Project of the Year» award in 2009.<sup>54</sup>

Historical climatology is another area that has grown greatly over the past couple of decades within global environmental history. This research area has a long history in the Nordic countries. As early as 1955, Gustaf Utterström wrote the article «Climatic Fluctuations and Population Problems in Early Modern History» which was reprinted in Worster's well-known anthology *The Ends of the Earth*.<sup>55</sup> Recently, Sven Lilja has headed investigations into how climate records from the 16th century can be used in interpreting political and economic developments,<sup>56</sup> while Danish physicist Bent Sørensen recently published *A History of Energy: Northern Europe from the Stone Age to the Present Day*, where the conditions forged by climate and energy supplies are wrought into a Big History synthesis of mainly the territories covered by modern-day Denmark.<sup>57</sup> Moreover, using historical demographical sources, Isabelle Brännlund and Per Axelsson have analyzed how Sami reindeer husbandry's strong connection with the land and climate change has affected its socio-ecological resilience and vulnerability in Sweden during the 19th century. The Sami reindeer herdsman tried to adapt to climate change by flexible use of pasture areas. Simultaneously, the process of colonization, the loss of authority over the land and the imposed regulation of reindeer management have obstructed and delimited ways to adapt.<sup>58</sup>

These examples from recent Nordic scholarship reveal how environmental history can be an effective proponent of multiple perspectives on problems as complex as those associated with the concept of the Anthro-

53. P. Holm, A. H. Marboe, B. R. MacKenzie, & B. Poulsen, Marine Animal Populations: A New Look Back in Time, in A. McIntyre, (ed.), *Life in the World's Oceans*, Wiley-Blackwell, 2010, <http://comlmaps.org/mcintyre>

54. Videnskab.dk, Miljøhistorikere vinder prisen for årets forskning, <http://videnskab.dk/kultur-samfund/miljohistorikere-vinder-prisen-arets-forskning>, accessed 1. September 2012.

55. D. Worster (eds.), *The Ends of the Earth: Perspectives on Modern Environmental History*, Cambridge, MA 1988.

56. S. Lilja, Lokala klimatkriser och kronans intressen – en fallstudie av tiondets variationer i Södertörns kustsocknar ca 1570-1630, in S. Lilja (ed.), *Människan anpassaren - människan överskridaren. Natur, bebyggelse och resursutnyttjande från sen järnålder till 1700-tal med särskild hänsyn till östra Mellansverige och Södermanlands kust*, Södertörn 2006: 4.

57. B. Sørensen, *A History of Energy: Northern Europe from the Stone Age to the present Day*, New York 2011.

58. B. Brännlund & P. Axelsson, Reindeer Management during the Colonization of Sami Lands: A Long-Term Perspective of Vulnerability and Adaptation Strategies, *Global Environmental Change* 2011, 3:1095-1105.

ocene. Some environmental historians use methods drawn from natural sciences, while others focus on translating results obtained by natural science methods and bringing them into historical narratives by adding a time dimension and a societal context. Apart from generating new knowledge, environmental historians engaging with theories, models, and data from other disciplines have contributed to entangling environmental history with other disciplinary ways of thinking about nature and society. They have increasingly brought the environment into historical discourses that in many cases are still predominantly occupied with the interests of nation, class, or the modernization of Western society, as well as argued for the place of human history in discourses previously dominated by the natural sciences.

### THIRD ENTANGLEMENT: NATIONAL, SPATIAL, AND TEMPORAL BOUNDARIES

The third entanglement of environmental history occurs when the objects of study cut through or bridge over established boundaries and outlooks, such as national, spatial, or temporal boundaries. Since national boundaries often do not correspond with ecological zones, environmental history necessarily deals with questions crossing political boundaries. Rivers, seas, air, migrating animals, seeds, pollution, viruses and other environmental phenomena do not stop at national borders. As environmental historian Joseph Taylor has pointed out, border crossings vary greatly in terms of the nature of human agency. Furthermore, while scholars usually analyze social, cultural and political borders, environmental history necessarily has to take heed not only of «the nature of space» but also the «space of nature» in the cross-border regions. Taylor urges environmental historians to pay attention to the use of boundary terminology.<sup>59</sup> Despite the strong Northern focus on «crossing borders», there has been little actual research that spans national borders. The titles of a number of Nordic publications refer to the crossing of borders and boundaries, though these are generally collections of articles each dealing with a different country or setting.

The Nordic debate on wolves exemplifies the problem of boundaries. During the 20th century the Finnish wolf population was kept alive only through individual wolves regularly entering from Russia across one of the most tightly socially controlled national borders in the world. In Finland, though, wolves were dealt with solely within a national context – by relentlessly hunting them down – until Finland joined the EU in 1995.

59. J. E. Taylor III, Boundary Terminology, *Environmental History* 2008, 13: 454-481.

With the introduction of EU directives regulating the control and size of the population, the wolves became an international issue, while their movement across the Finno-Russian border continued unabated. The transboundary movement of wolves continued to be considered in terms of local history. At the same time they had become part of a larger international history of the EU's environmental legislation.<sup>60</sup> Finnish wolves are therefore a mixture of the history of transboundary migratory animals, local social history of the environment, and the history of international environmental diplomacy. We can find similar movements between the Norwegian and Swedish border, where wolves move in and out of different wildlife management regimes, illustrating how the lives of animals are entangled in national politics and borders.<sup>61</sup> In addition to crossing national borders, wolves challenge our assumptions of wild and domestic, reminding us of the intense and paradoxical management and maintenance that wildness has come to require in the Nordic countries.

The story of Atlantic and North Sea fisheries is equally entangled. Dutch fishing boats in the 17th and 18th centuries could sail freely wherever they wanted in order to satisfy Europeans' insatiable demand for herring.<sup>62</sup> Things have changed since the early modern period, as fish stocks collapsed in the latter part of the 20th century – partly as a result of these fishing practices. Herring and other fish species are now regulated by a dense web of supranational, international, and regional actors and treaties. European nations, however, keep competing in harvesting diminishing fish stocks; illegal catches and trade are not unusual.<sup>63</sup> Yet again, Hardin's tragedy of the commons thesis seems to be indicative of modern resource management.<sup>64</sup> The management of this shared natural resource is made even more complex by the leagues of fisheries scientists whose reference points can be their epistemic communities, their disciplinary cultures shared by scientists across the borders, their home

60. J. Bisi, *Suomalaisen susikonfliktin anatomia*, Oulu 2010.

61. P. Wabakken, *et al.*, The recovery, distribution, and population dynamics of wolves on the Scandinavian peninsula, *Canadian Journal of Zoology*, 2001, 79: 710-725; Ulf Nyrén, Från utrotning till utbredning: Den svenska vargstammen som historiskt allmoge- och överhetsprojekt, *Historisk tidskrift* (Sweden) 2012, 3: 365-391; Ö. Kardell and A. Dahlström, Wolves in the early nineteenth century county of Jönköping, Sweden, *Environment and History*, forthcoming 2013.

62. Poulsen 2008.

63. H. M. Karlsdóttir, *Fishing on Common Grounds: the Consequences of Unregulated Fisheries of North Sea Herring in the Postwar Period*, Göteborg 2005.

64. The political scientist Eleanor Ostrom won the 2009 Nobel Prize in Economics for her work on how to manage shared resources such as fish, water and forests, co-operatively; in other words, «the commons» that Hardin analyzed. E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge, MA. 1990.

states, or the supranational institutions for which they are giving recommendations.<sup>65</sup>

While there are exceptions, we would argue that borders and boundaries are still a challenge to Nordic environmental historians, who have mostly been oriented towards national histories.<sup>66</sup> This is unfortunate, considering the many cultural, political, and spatial similarities between them that offer plenty of possibilities for research projects across state boundaries. In addition to the partly overlapping ecoregions, the Nordic countries have much in common regarding their economic production, legislative approaches to the environment, such as the unique concept of everyman's rights, and they face similar environmental problems as well. From a historical perspective, water and waterways have to a large extent connected Scandinavia within a cohesive geographical, political, and cultural region. This is not only true of the Baltic Sea, but also of the Arctic Ocean.

Ideas about nature have flowed back and forth across national, temporal, and spatial boundaries, continually changing in the process. For instance, concern over the loss of natural environments may first have awoken in Europe's overseas colonies, but were transported to the European mainland by explorers.<sup>67</sup> Finnish historians Laura Hollsten (Caribbean) and Leila Koivunen (Africa), among others, have demonstrated similar movements of environmental ideas.<sup>68</sup> Another example is the national park movement, which had its origins in the late 19th century United States. When influences and practices for both conservative forest management and nature conservation developed in Finland and Sweden a while later, they primarily came through Germany.<sup>69</sup>

65. Taylor 2008: 461.

66. Some notable exceptions include environmental and energy histories concerning the Öresund region, see L. Berggren & P. Eliasson, *Energi och temporalitet*, *Svensk historisk tidskrift* 2010, 130; Björk, Eliasson, & Poulsen 2009; see <http://www.valt.helsinki.fi/projects/enviro/> for a series of collaborative studies by the working group led by S. Laakkonen on water protection in cities around the Baltic Sea; H. Siiskonen, *Myrkyttäkää, ruiskuttakaa, hävittäkää? Ruotsalaisten ja suomalaisten maatalouden ammattilehtien kasvinsuojeluvuolistus 1940–1980*, Helsinki 2000; and the ecohistorical approach to the history of Klarälven in the border region of Norway and Sweden in E. Svensson, H. Ibsen & L. Nyberg (eds.), *Klarälven*, Karlstad 2011.

67. R. H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600–1860*. Cambridge, MA 1995.

68. L. Hollsten, *Knowing Nature: Knowledge of Nature in seventeenth Century French and English Travel Accounts from the Caribbean*, Åbo 2006; L. Koivunen, *Visualising Africa in Nineteenth-century British Travel Accounts*, New York and London 2009.

69. M. Pekurinen, *Elämää metsässä ja metsästä*. Metsäkonfliktin kahdet kasvot, in H. Roiko-Jokela (ed.), *Luonnon ehdoilla vai ihmisen arvoilla. Polemiikka metsiensuojelusta 1850–1990*, Jyväskylä 1997: 45–98; J. Rauminen, *The Problem of Forest-based Development as Illustrated by the Development Discussion, 1850–1918*, Helsinki 1990: 122–135; D. Haraldsson, *Skydda vår natur! Svenska naturskyddsföreningens framväxt och tidiga utveckling*, Lund 1987; L. J. Lundgren, *Staten och naturen: Naturskyddspolitik i Sverige 1869–1935, del 1 1869–1919*, Brottyb 2009.

Another turning point in environmental ideas emerged with the notion of the global environmental crisis in the latter part of the 20th century, which gave birth to environmentalism as a mass movement. With the help of the mass media, new ideas moved across borders faster than ever before. The understanding of harmful health and environmental effects of toxic chemicals reflected in Rachel Carson's *Silent Spring*, for instance, was quickly translated after its publication in 1962 into Danish, Swedish, and Finnish in 1963, Icelandic in 1965, and Norwegian in 1966. But as ideas crossed borders they also took on distinctive shapes in each country, all of which environmental historians have to untangle separately in each case. Modern Swedish environmentalism, for example, received its formative push from a combination of American influence and national cultural characteristics, while in Finland the external influence came mainly from Swedish environmental toxicology rather than the United States.<sup>70</sup>

Hardly anything has contributed as much to the development of a global environmental awareness as transboundary pollution. As a result of atmospheric nuclear tests, global radioactive fallout multiplied in the 1950s and early 1960s and spread the fear of cancer throughout the Western world. Toxic chemicals eddied through oceanic currents and via wind; sulphur dioxide fallout from Great Britain and Central Europe, but also from domestic sources,<sup>71</sup> devastated forests and acidified lakes in Scandinavia. The first signs of disruption in the marine environments quickly became apparent when increasing amounts of chemicals and nutrients entered the Baltic Sea from pulp factories, cities, agricultural land, as well as deforested and ditched land.

The era of environmental diplomacy developed in the wake of such commonly recognized transnational environmental problems, and the Nordic countries often acted as path-breakers. Sweden organized the first United Nations conference on the environment in Stockholm in 1972 and was active in establishing international rules for air pollution.<sup>72</sup> Finland

70. T. Räsänen, *Converging Environmental Knowledge: Re-evaluating the Birth of Modern Environmentalism in Finland*, *Environment and History* 2012, 2: 159–181; E. Mårald, *Synen på natur och miljö under den högindustriella epoken*, in J. af Geijerstam (ed.), *Industriland: 12 forskare om när Sverige blev modernt*, Stockholm 2008.

71. See, for example, J. Kunnas, *Fire and Fuels: CO<sub>2</sub> and SO<sub>2</sub> Emissions in the Finnish Economy, 1800–2005*, Florence 2009; J. Kunnas & T. Myllyntaus, *The Environmental Kuznets Curve Hypothesis and Air Pollution in Finland*, *Scandinavian Economic History Review* 2007, 55: 101–127.

72. B.-O. Linnér, & M. Jacob, *From Stockholm to Kyoto and Beyond: A Review of the Globalisation of Global Warming Policy and North-South Relations*, *Globalizations* 2005, 3: 403–415; L. J. Lundgren, *Acid Rain on the Agenda: A Picture of a Chain of Events in Sweden, 1966–1968*, Lund 1998.

took a leading role in developing an environmental regime to protect the Baltic Sea in the early 1970s. Seen from a Western point of view, negotiations over the transnational environmental space collided with the Cold War political space. Cold War politics advanced the building of a regional agreement between the littoral states, since both sides of the Iron Curtain wanted to tie the opponents into a network of cooperative activities and thus consolidate peace in Europe between the military blocs.<sup>73</sup> The agreement, however, proved inefficient, in part due to the absence of a shared environmental consciousness, and in part as a result of political motivations carrying more weight than environmental interests. The convergence between environmental issues and other political, social, and cultural processes has since become even more prevalent, with problems such as global climate change and resource scarcity often threatening the poorest and the most vulnerable nations first. Environmental history can thus illuminate and open new perspectives on problems traditionally covered in other fields of history.

The globalization of ecological changes caused by human activity is not just a phenomenon of the contemporary world, but has been going on for centuries. Recent decades have made it increasingly clear that global histories necessarily entail the inclusion of environmental and ecological aspects on a long time scale. To understand, for example, the development of global trade networks and changes in the relative strength of nations one has to bear in mind the natural resources and technologies they have been able to exploit. Indeed, as scholars such as J.R. and William McNeill, Jared Diamond, and Robert Marks, among others, have argued, the rise of Europe was greatly indebted to favorable environmental circumstances.<sup>74</sup> As a result, environmental history scholarship needs to transcend not only national but also systemic and civilizational boundaries, for example by studying the colonization processes that created capitalist networks, through which resources, institutions, and practices have flowed in and between sub-systems, often in competing directions. Already in the 1970s, Sven-Erik Åström, the first eminent Finnish historian to introduce an environmental approach to his research, studied exploitation of the Finnish environment from a Northern European trad-

73. T. Räsänen & S. Laakkonen, Cold War and the Environment: The Role of Finland in International Environmental Politics in the Baltic Sea Region, *Ambio* 2007, 2-3: 229-236.

74. J. R. McNeill & W. McNeill, *The Human Web: A Bird's-Eye View of World History*, New York, 2003; J. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies*, New York, 2005; R. Marks, *The Origins of the Modern World: A Global and Ecological Narrative from the Fifteenth to the Twenty-first Century*, Lanham 2006.

ing systems perspective.<sup>75</sup> In recent years, Jason W. Moore has done Wallersteinian core-periphery analysis, arguing that early modern Northern Europe participated in a capitalist economy as mainly a resource periphery for European economic powers.<sup>76</sup> In a similar vein, Alf Hornborg has examined the energy flows in the trade system of the British Empire during the 19th century, arguing that the British economy was reliant, among other things, on Swedish iron.<sup>77</sup>

Europeans have had a profound influence on global environments. The European Colonization of much of the world brought European fauna, flora and microbes to every corner of the world in a process that Alfred Crosby called the «Columbian exchange.»<sup>78</sup> By transporting their practices, ideas and institutions, immigrants actively claimed control over the environment. Whether the immigrants in question were British ecologists studying nature in colonized lands,<sup>79</sup> Forest Finns bringing their slash-and-burn agriculture to peripheral Swedish forests in the early modern period,<sup>80</sup> Swedish settlers in New Sweden in Delaware,<sup>81</sup> or Norse Vikings settling on the North Atlantic Islands,<sup>82</sup> they adapted their traditional culture to new environments resembling those of their homelands. Colonization is often related to overseas lands of European superpowers, but the Nordic countries had their own colonies in the North, where Danes, Finns, Norwegians, and Swedes brought their own concepts of nature and practices. Sami land had been owned by *siidas*, or Sami villages, as usufruct rights, which enabled the states to declare the land as belonging permanently to the crown. This

75. S.-E. Åström, *Natur och Byte. Ecologiska synpunkter på Finlands ekonomiska historia*, Ekenäs 1978; S.-E. Åström, *From Tar to Timber: Studies in Northeastern European Forest Exploitation and Foreign Trade 1660–1860*, Helsinki 1988.

76. J. W. Moore, Amsterdam is Standing on Norway? Part I: The Alchemy of Capital, Empire and Nature in the Diaspora of Silver, 1545–1648, *Journal of Agrarian Change* 2010, 1: 35–68.

77. A. Hornborg, Footprints in the Cotton Revolution as Time-Space Appropriation and Environmental Load Displacement, in A. Hornborg, J.R. McNeill & J. Martinez-Alier (eds.), *Rethinking Environmental History: World-System History and Global Environmental Change*, Lanhan 2007: 259–272.

78. A. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900*, Cambridge, MA 2004.

79. P. Anker, *Imperial Ecology: Environmental Order in the British Empire, 1895–1945*, Cambridge 2001.

80. L. Östlund, *Exploitation and Structural Changes in North Sweden Boreal Forests*, Umeå 1993; E. Lisberg Jensen, *Som man ropar i skogen: Modernitet, makt och mångfald i kampen om Njakäffäll och den svenska skogsbruksdebatten 1970–2000*, Lund 2002; H. Antonson & U. Jansson (eds.), *Jordbruk och skogsbruk i Sverige sedan år 1900*, Stockholm 2011; Björn 2000; Lehtinen 1991.

81. V. Immonen, Farming and Brass Kettles as Forms of Colonial Encounter: New Sweden from an Archaeological Perspective, *Scandinavian Studies*, 2011, 83: 365–386.

82. Jane Harrison, Mounds, Middens and Social Landscapes: Viking-Norse Settlement of the North Atlantic, (c. 850 – c. 1250 AD), in Jørgensen & Sörlin 2013.

has caused conflicts up until the present day, whenever industrial practices from the south and traditional Sami livelihoods have competed over the use of land.<sup>83</sup>

Environmental and technological practices cross temporal and generational boundaries in such ways that they colonize the future of societies. When it comes to energy, for example, developing appropriate technologies with which to build and maintain the entire system of extraction, transportation and conversion of raw materials into energy for end-users requires huge amounts of capital and resources. Furthermore, development of these large sociotechnical systems tends to lead to systemic resistance to change, whether you call it technological lock-in, path dependency, or momentum.<sup>84</sup> Energy systems are a particularly good example of such resistance to change, but there are countless other examples of how the paths taken, from forest management practices to industrial farming and the use of synthetic materials, direct future developments in ways that might bring about serious environmental problems. Arne Kaijser, for instance, demonstrates the spread of technical infrastructures such as roads, railroads, power lines, canals, and so on, across Swedish landscapes.<sup>85</sup> Technological choices, once made, can constrain the decisions we make as societies for decades, if not centuries. The intersections between the histories of technology and environment are critical to understanding not just the future of our energy-producing landscapes, but also the ways in which environmental policies are implemented through technological systems.<sup>86</sup> Hydropower development has been particularly critical in the Nordic countries, but also controversies over nuclear power as an alternative.<sup>87</sup> After Fukushima, these questions

83. J. Nyysönen, Luonnonkansa metsätalouden ikeessä?, in Roiko-Jokela 1997: 99–128; J. Nyysönen, Establishing Territorial Sovereignty in Finland: The Environmental Consequences of Ethno-nationalization of Resource Management in Inari, in S. L. Engerman & J. Metzger (eds.), *Land Rights, Ethno-Nationality and Sovereignty in History*, London and New York 2004: 358–387.

84. R. Cowan, Nuclear Power Reactors: A Study in Technological Lock-In, *Journal of Economic History* 1990, 3: 801–814; P. A. David, Path dependence: a foundational concept for historical social science, *Cliometrica* 2007, 2: 91–114; T. P. Hughes, *Networks of Power: Electrification in Western Society 1880–1930*, Baltimore 1993.

85. A. Kaijser, *I fädrens spår: Den svenska infrastrukturens historiska utveckling och framtida utmaningar*, Stockholm 1994.

86. F. A. Jørgensen, *Making a Green Machine: The Infrastructure of Beverage Container Recycling*, New Brunswick 2011.

87. Karlsdóttir 2010; Y. Nilsen, Ideologi eller kompleksitet? Motstand mot vannkraftutbygging i Norge i 1970-årene, *Historisk Tidsskrift* (Norway) 2008, 1: 61–84; E. Jakobsson, *Industrialisering av älvar: Studier kring svensk vattenskaftsutbyggnad 1900–1918*, Göteborg 1996; J. Anselm, *Vattenkraft och naturskydd: En analys av opinionen mot vattenkraftsutbyggnaden i Sverige 1950–1990*, Linköping 1992.



about the entanglements of technological trajectories, risk, energy, and environment are more pertinent than ever.<sup>88</sup>

#### THE FUTURE OF ENVIRONMENTAL HISTORY IN THE NORDIC COUNTRIES

Through discussion of the previous three entanglements, we have established that the phenomenon we call nature is thoroughly entangled with society in ways that render nature and society mutually constitutive. In other words, they are not separate, independent spheres; we cannot talk about one without simultaneously talking about the other. Environmental history as a field rests on this premise, as reflected in both the topics studied and the approaches taken. Environmental historians brought a longer time perspective to the table, embedding historical studies of human activities in the past in debates of contemporary concerns.

As in any other emerging «challenger» discipline, environmental historians often need to provide justification for their perspectives. This demand for demonstrations of usefulness is of course not unique to environmental history, as all of the humanities have come under pressure through the spread of New Public Management principles at Nordic universities. For example, the SAMKUL program of the Research Council of Norway explicitly challenged the humanities to meet this call for relevance.<sup>89</sup> A similar discussion has recently taken place in the other Nordic countries, where key business and industry actors have criticized humanities' teaching and scholarship for not meeting the needs of contemporary society.<sup>90</sup> We argue that environmental history – and the broader perspective of the environmental humanities – is well positioned to counter this criticism, as evidenced by the KTH Environmental Humanities Laboratory currently under establishment by Sverker Sörlin at the Royal Institute of Technology in Stockholm,<sup>91</sup> and the environmental history component of the large MISTRA program Future Forests, which aims to develop sustainable strategies for Swedish forest management under uncertainty and risk.<sup>92</sup>

88. S. Pritchard, An Envirotechnical Disaster: Nature, Technology, and Politics at Fukushima, *Environmental History* 2012, 2: 219–243.

89. Samfunnsutviklingens kulturelle forutsetninger (SAMKUL), <http://www.forskningsradet.no/servlet/Satellite?pagename=RCN/kortURL/kortURL&prognose=samkul>, accessed 1. September 2012.

90. A. Ekström and S. Sörlin, *Alltings mått: Humanistisk kunskap i framtidens samhälle*, Stockholm 2012.

91. Carl Bennet skänker 15 miljoner til KTH, <http://www.kth.se/alumni/2.37896/carl-bennet-skänker-15-miljoner-till-kth-1.286194>, accessed 13. August 2012.

92. Future Forests, <http://www.futureforests.se/>, accessed 1. September 2012.

Environmental historians have been reflecting on the question of relevance since the genesis of the discipline. In Roderick Nash's article on teaching the first American environmental history course in 1970, he describes the feeling of at last being «relevant» as a historian.<sup>93</sup> He did not elaborate exactly what this relevance was, other than responding to the general interests in environmental issues among students. William Cronon went further in his 1993 presidential address to the American Society for Environmental History by reflecting on his experience teaching environmental history at Yale. Despite Cronon's relative optimism about the future of the environment, his students found that his course presented an «unrelentingly depressing story that left little or no hope for the future.»<sup>94</sup> We agree with this statement. It sometimes seems that environmental history is just one damned catastrophe after another, to paraphrase Arnold Toynbee. We need to contribute to richer stories of the human–environment relationship. Cronon argues that one of the most important tasks of environmental historians is to demonstrate that «there is not One Big Problem called ‘The Environment’.» Instead, we have a near-infinite number of problems, or rather relations between people and the world around them, the sum of which comes «very close to defining what it means to be alive.»<sup>95</sup> Environmental history reminds us that we must never stop engaging with these relations on a personal, cultural, political, and historical level.

Like Cronon, we believe that environmental history holds the potential to contribute more constructively to contemporary discourse. This could be done in several ways and in several arenas. Starting with the narrowest one, bringing environment into the history discipline matters because it allows us to raise new questions. It directs our focus towards new and unconventional sources and actors and gives new insights. Nordic environmental historians have, for instance, studied rivers, seas, landscapes and different kinds of species as analytical categories.<sup>96</sup> Moreover, environmental history can increase the relevance of historical research by connecting historical processes to present-day problems. Sverker Sör-

93. R. Nash, American Environmental History: A New Teaching Frontier, *Pacific Historical Review* 1972, 3: 362–372

94. W. Cronon, The Uses of Environmental History, *Environmental History Review* 1993, 3: 1.

95. *Ibid.*: 20.

96. E. Jakobsson, *Industrialisering av älvar: Studier kring svensk vattenkraftutbyggnad 1900–1918*, Göteborg 1996; T. Aarnio, et al. (ed.), Science and Governance of the Baltic Sea: Science and Management: Governance of a Common Sea, special issue of *Ambio* 2007, 2–3; J. Lennquist, *Vätmarkshistoria: Hjälmarens och Kvismarens stränder under 1800- och 1900-talen*, Örebro Studies in History 7, 2007.

lin uses the concept «contemporaneity» to capture how environmental history has both broadened our understanding of the contemporary era and linked the present to earlier epochs.<sup>97</sup>

Much research remains to be done if we are to write properly entangled environmental histories. The Great Nordic Environmental History has yet to be written – we do not yet have our *Nature's Metropolis*, after William Cronon's influential book which became essential reading for any scholar and student of the United States, and not just those interested in environmental history.<sup>98</sup> It is not immediately clear to us exactly what such a book would involve, but it seems likely it would examine what holds the Nordic countries together as a region while at the same time keeping them apart as individual countries, by simultaneously problematizing Nordic physical and cultural spaces and traditions. The Nordic region does not have the same centered gravitational pull as Cronon's Chicago, yet as we have seen the Nordic countries have their own hinterlands. A network full of nodes, flows, differing densities, and resistances seems like a more appropriate model for conceptualizing the Nordic countries than the Metropolis. Whether or not the Nordic countries have their own environmental Sonderweg, shaped by Nordic nature and the historical environments we have created, remains to be seen.

In asking such questions about the history of Nordic nature and culture, we see that environmental history has moved away from the fundamental essentialism of early scholarship, where nature served as an unchanging baseline, physically or morally. Nature may be out there in the sense that there are animals, trees, mosquitos, weather, the sun, water, and so on, but it has different meanings and different effects on different groups. Nature has no voice of its own, but is represented by groups and actors, in different media. Thus, in the age of the Anthropocene, environmental history can contribute in a constructive way to connecting between future uncertainties, contemporary problems and lessons learned from the past. The end of Nature as a sphere separate from society is not to be lamented. After all, it is only after the end of Nature that we can ask what kind of natures we really want. And if we don't ask this question, we can't protect the environment or our place in it.<sup>99</sup>

97. S. Sörlin, The Contemporaneity of Environmental History: Negotiating Scholarship, Useful History, and the New Human Condition, *Journal of Contemporary History* 2011, 5: 610-650.

98. Cronon 1991.

99. We thank Nordforsk for funding the Nordic Environmental History Network (NEHN) and the two anonymous reviewers for their comments.