

Naturalizing History Historicizing Nature

The times of environmental history

Hilbrand Wouters



**Utrecht
University**

Naturalizing history, historicizing nature: The times of environmental history

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Hilbrand Wouters, BSc.

First Supervisor: Dr. P.A. Huistra
Second Supervisor: Dr. R.B. Wille

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Summary

Climate change is not one story. It is both too fast and too slow, it is everywhere and nowhere at once. Its spatiotemporal scales transcend any single person's life, but at the same time most people will experience its effects, and many are somehow responsible. So, to make historical sense of environmental change's origins and effects, requires not a single history, but diverse narratives and temporalities which acknowledge human and non-human agencies, as well as the distinct experiences and events associated with it.

This thesis first reviews recent scholarship, broadly belonging to the environmental humanities, which claimed that most historical narratives remain too anthropocentric and teleological to properly capture environmental change's histories in print, implicitly still forwarding "nature" as essentially ahistorical. Until now, that is; scholars such as Dipesh Chakrabarty argue that a rapidly growing awareness of global climate change signifies an epistemic break towards multitemporal "Anthropocene histories", which are both more multiscalar and less linear than previous histories.

Viewing this supposed epistemic break as an antipositivist fallacy, this thesis instead identifies stronger historical roots, and various social and scientific entanglements of historians' temporalities. It does so through case studies of the works of pioneering U.S. environmental historians from the 1960s forwards, who seemingly ventured into blind spots of narrative terrain, as environmental historians are still doing when attempting to put the loosely connected effects of environmental change in words.

Through an analysis, inspired by recent theoretical history, of these works' temporalities, this thesis reveals heterogenous origins of innovative temporal elements, with changes of abstract environmental awareness just one of many driving factors. In particular, it is argued that the composition of temporally diverse histories, which are representative of both human and non-human pasts, necessarily requires an interdisciplinary methodology and socio-cultural engagement. Such diverse methodologies can include an acute awareness of ecological history, implementation of (already existing) less-linear narrative frameworks and interviewing. These strategies may aid historians to deepen the understanding of heterogenous dimensions to climate change and thus help citizens and policymakers to gain new perspectives on its effects and causes.

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Chapter 1. A beginning

Tijd

*Ik droomde, dat ik langzaam leefde...
langzamer dan de oudste steen.*

*Het was verschrikkelijk: om mij heen
schoot alles op, schokte of beefde,
wat stil lijkt. 'k Zag de drang waarmee
de bomen zich uit de aarde wrongen
terwijl ze hees en hortend zongen;*

...

*- De wanhoop en welsprekendheid
in de gebaren van de dingen,
die anders star zijn; en hun dringen,
hun ademloze, wrede strijd...*

*Hoe kón ik dat niet eerder weten,
niet beter zien in vroeger tijd?*

Hoe moet ik het weer ooit vergeten?

M. Vasalis (1940)¹

HET ANTROPOCEEN FUCKT MET ME GAME

*HET ANTROPOCEEN FUCKT MET ME GAME
HET ANTROPOCEEN FUCKT MET ME GAME
WIL IK NOG WEL KINDEREN OF DENK IK
ALLEEN MAAR AAN MEZELF?*

*MOET IK NOG EEN HYPOTHEEK OF IS HET
ZONDE VAN ME GELD?*

NU LEEF JE NIET MEE

*MAAR WACHT MAAR TOT JE ZELF MOET
VLUCHTEN*

NAAR MAASTRICHT AAN ZEE

Hang Youth, HET K-WOORD (2021)²

Introduction

Vasalis' nightmare is turning into reality. Ancient pasts force themselves into our warming present, now that mountains are denuded from their previously "eternal" icecaps and sunken ships resurface as riverbeds run dry.³ In Siberia, you can hunt for mammoths again, their remains coming afloat in a thawing permafrost.⁴ And at every low-lying coast, a swelling sea is drawing dangerously near.

Writing before climate change began to be felt, Vasalis had it easy. In the 1940s, one could still avoid her final existential questions by fleeing into the mundanities of everyday life, which were almost always more relevant than the deep past. But now, the daily offers little shelter from the haunting depths of time, which are forced into political and social reality. To echo the activist punk band Hang Youth: dictating one's life in the Anthropocene,

¹ M. Vasalis, 'Tijd' in *Parken en Woestijnen*, 1940.

² Hang Youth, *HET ANTROPOCEEN FUCKT MET ME GAME*, HET K-WOORD (Burning Fik, 2021).

³ 'Archeologen niet blij met droge rivieren: "Veel erfgoed verdwijnt"', *NOS*, 22 August 2022, <https://nos.nl/artikel/2441672-archeologen-niet-blij-met-droge-rivieren-veel-erfgoed-verdwijnt>.

⁴ 'Waarom er in Siberië nog altijd op mammoeten wordt gejaagd', NRC Onbehaarde Apen, 29 September 2021, <https://www.nrc.nl/nieuws/2021/09/29/156-waarom-er-in-siberie-nog-altijd-op-mammoeten-wordt-gejaagd-a4060122>.

the controversial notion of humanity's very own geological epoch, is a perpetual encounter with foundations once held to be stable, whether they are the physical foundations of a house built on once frozen ground, or the foundations of one's thoughts, tacitly relying on a belief that there is something out there, still stable.⁵ In other words, the experience of time itself has changed as we live in a world more controlled and better understood than ever before, but with a highly uncertain future.

This paradox is the broad background to this thesis. Its foreground is the niche of history roughly since the late 1940s, environmental history specifically. When (Western) humans have set out to think about their past in the last few centuries, their Enlightenment minds have been directed mostly to the humans that shaped their surroundings with violent wars, through engineering or intellectual advance, often leaving the natural world in the dark. Without the revolutions and epochs that organize a human past, the way the non-human appears from such anthropocentric histories is as vast, slowly changing and irrelevant, if it is seen at all. With even the geological now mattering on daily scales, it's time to rethink history.

But the human-natural past is not new. At many earlier moments historians have been confronted with pasts that were obviously a shared project between humans and non-humans. Combining approaches from theoretical history, history and philosophy of science, and anthropology of science, this thesis will focus on case studies of American environmental histories, a loose academic field emerging in the 1960s. The main research question this project once departed from was as follows: how have environmental historians juxtaposed the times of nature to the times of humanity? Though it has often guided me through my research, the question also catapulted me into distant regions, and I have parted ways with its original formulation.

Fishing for times

After all, this research question contains a problematic, though common, presumption that somehow human times are separate from those of nature. For example, Vasalis reproduced such a division, viewing earthly times as haunting in their vastness and meaninglessness, impossible to place side-by-side to her own life. However, in retrospect, I myself ascribed to that presumption too at the start of this project (though I would definitely have denied it), and much of this project has been a slow encounter with the ways it was entrenched in my own thoughts.

The schism is intuitive to a certain degree. Human lives, about a century in length at best, are meagre compared to the lives of the mountains or valleys where humans live, or magnificent with respect to the microbes that occupy human bodies. Even the history of the greatest civilizations dissolve into nothingness when compared to the tectonic drift which formed the continents they strove to conquer. But time isn't only about scales: (modern) society is also place of order. A life invariably begins with birth, it ends with death and is

⁵ For example, 'Climate stress' has become a common condition: 'Klimaatstress te lijf met verbeeldingskracht', Utrecht University, 27 June 2022, <https://www.uu.nl/nieuws/klimaatstress-te-lijf-met-verbeeldingskracht>.

interspersed with countless milestones, like career, marriage and offspring. The lives we imagine for our societies are not that different, created in mirror image to human lives and marked by the occasional revolution. Nature doesn't generally have this structure; it is hard to imagine an animal society going through the same revolutions inscribed in humanity. At least, for me it was hard to imagine this, at the start of this project.

No doubt it was also hard for environmental historians. Nevertheless, their books have shown how occasionally, human behaviour mirrored that of fish, and *vice versa*. Or how human history can be likened to that of the slow moving, complex life of a whole landscape, without any revolutions. Or how human behaviour is sometimes as random as that of a wildfire. The times of fish, wildfire and landscape are ordered vastly differently than one another, and in this thesis, I show how historians explored alternative methods than conventional storytelling to assemble these diverse times into history, better representing the human-natural past. Though once innovative, these methods have themselves become established in making sense of the diverse past and future conditions of life in the Anthropocene. Through the lens of environmental historians, I will question the necessity of this schism between natural and human times, as well as the conception thereof in recent perceptions of modern history.

A temporal and ontological divide

Somewhat ironically, the dualistic view of times in nature and humanity is made particularly visible in recent scholarship which has tried to close the very gap. To echo my own experience of thinking about time throughout this project, I will draw upon, but also offer points of departure from this scholarship in this thesis. One early general cornerstone of such non-modern thought is Bruno Latour's *We Have Never Been Modern* (French original 1991), which carefully rendered a picture of modernity's fictitious dualism between the human and non-human, as well as the pitfalls any search for non-modernity will invariably run into, which Latour himself did too in his book.⁶ More recently, in *The Shock of the Anthropocene* (French original 2013), historians of science Christophe Bonneuil and Jean-Baptiste Fressoz couple the rise of modernity throughout the Enlightenment to an intellectual and institutional rupture: 'the great temporal and ontological divide between nature and society', which they argue was driven open through the creation of a vast, external context to human history by advances in geology.⁷ Since then natural scientists are chiefly concerned with the earth, while humanist scientists dwell in a separate domain. The authors argue that the 'shock of the

⁶ Bruno Latour, *We Have Never Been Modern*, 5th ed. (Harlow, Essex: Pearson Education, 2000). It seems that no number of reflective layers can truly prevent such contradictions. In particular, to understand lingering modern thought's repressive tendency towards categorization and order, requires a certain arbitrary ordering to begin with, such as a debatable reconstruction of a past dualism as a reference point, which Latour does too. This I myself did on the previous pages, and is characteristic for recent scholarship which is seeking less anthropocentric intellectual frameworks, more suitable for understanding human-natural pasts and better at motivating action towards less violent futures of human-natural coexistence.

⁷ Christophe Bonneuil en Jean-Baptiste Fressoz, *The Shock of the Anthropocene: The Earth, History, and Us* (London ; Brooklyn, NY: Verso, 2016), 35.

Anthropocene’ may make these two cultures reunite.⁸ To that end, they sketch future projects that may help to understand the present condition of the Anthropocene by critically engaging with environmental knowledge provided by earth scientists, while staying attentive to the traces of modernity’s fiction of universal progression. For example, they chart new ‘conceptual grammars’; the vocabulary used to make sense of the past. Currently, they argue, our conceptual grammars only lead to anachronistic views of past actors as environmentally aware (or unaware). With a revised vocabulary we could better understand the way in which they dealt with their surroundings.⁹

In 2009, Indian postcolonial scholar Dipesh Chakrabarty drew up a more radical, but similar, picture in an influential article in the journal *Critical Inquiry*, proposing that ‘anthropogenic explanations of climate change spell the collapse of the age-old humanist distinction between natural history and human history.’¹⁰ Chakrabarty focussed strongly on the temporal character of this divide, with historians supposedly ignorant to the geological scales in which their histories have played out, reserving all agency for humans. Since 2009, Chakrabarty has attempted to sketch how ‘a mode of thinking’ could be developed which could ‘hold together these rather different senses of time.’¹¹ Besides simply asking bigger questions, this involves a new language, similar to the new grammar proposed by Bonneuil and Fressoz, such as reviewing ‘the political’ as something which acts not just upon humanity, but upon the planet as a whole.¹² Successfully closing this temporal divide has been proposed to require truly ‘multiscalar’ perspectives, flexibly shifting between big geological layers and those of the human present, while contemplating the continuities as well as the discontinuities of the human and non-human past.¹³

⁸ *Ibid.*, 40.

⁹ *Ibid.*, 160 – 184.

¹⁰ Dipesh Chakrabarty, ‘The Climate of History: Four Theses’, *Critical Inquiry* 35, no. 2 (January 2009): 197–222, <https://doi.org/10.1086/596640>, 201.

¹¹ *Ibid.*, 201 – 206; Dipesh Chakrabarty, ‘Anthropocene Time’, *History and Theory* 57, no. 1 (March 2018): 5–32, <https://doi.org/10.1111/hith.12044>, 5. This article is part of a larger collection dedicated to the same questions, see: Dipesh Chakrabarty and Bruno Latour, *The Climate of History in a Planetary Age* (Chicago ; London: The University of Chicago Press, 2021).

¹² Which of course echoes Latour’s Parliament of Things. Chakrabarty, ‘Anthropocene Time’, 22 – 32.

¹³ Marek Tamm and Zoltán Boldizár Simon, ‘More-Than-Human History: Philosophy of History at the Time of the Anthropocene’, in *Philosophy of History: Twenty-First-Century Perspectives*, 1st ed. (Bloomsbury Publishing Plc, 2021), 208; Anders Ekström and Staffan Bergwik, eds., ‘Introduction. Dividing Times’, in *Times of History, Times of Nature: Temporalization and the Limits of Modern Knowledge*, Time and the World : Interdisciplinary Studies in Cultural Transformations, volume 5 (New York: Berghahn, 2022), 12–16; Julia Adeney Thomas, ‘History and Biology in the Anthropocene: Problems of Scale, Problems of Value’, *The American Historical Review* 119, no. 5 (1 December 2014): 1587–1607, <https://doi.org/10.1093/ahr/119.5.1587>. There is more to posthuman philosophy of history than the multiscalar though, such as the multispecies perspective. More interesting for questions about cognition than temporality, it will not be explicitly dealt with throughout this thesis. Besides Tamm and Simon’s article, see: Emily O’Gorman and Andrea Gaynor, ‘More-Than-Human Histories’, *Environmental History* 25, no. 4 (1 October 2020): 711–35, <https://doi.org/10.1093/envhis/emma027>; Ewa Domanska, ‘Posthumanist History’, in *Debating New Approaches to History*, ed. Marek Tamm and Peter Burke (Bloomsbury Academic, 2018), 327–52, <https://doi.org/10.5040/9781474281959>.

I do not wish to downplay the degree to which the Anthropocene as an epoch, or environmental change in general, illuminates Anthropocentric legacies lurking within modern thought. If anything, I hope this thesis highlights exactly that. Yet, I offer three interrelated points of departure with respect to the narratives above, which have paid little attention to the diverse recent past of historical imagination.¹⁴

Firstly, in a move of what might be termed ‘climate reductionism’, the emphasis on large scales is motivated by a view of climate change chiefly as a global problem, which overlooks both regional variability and the localized apprehension of climate change.¹⁵ This past summer alone, Europe experienced climate change in action as a form of self-inflicted drought and heat, a collateral damage of Western progress. In contrast, Pakistan suffered disastrous floodings as a form of continuing violence done by Western modernity.¹⁶ In some cases, environmental change is just another type of change. Secondly, the emphasis on the suddenness with which the Anthropocene is opening people’s eyes to integrative modes of thinking is at the very least unproductive in highlighting its relevant historical roots, and it is philosophically sketchy. The suggestion that a ‘shock’ is remaking historical imagination, ontology and temporality all at once gives it a paradigmatic feeling, with its antipositivist pitfall of ignoring the subtleties of methodological and epistemological change. This thesis, I hope, paints a broader picture of the diverse origins of dynamic temporal constructions, which have scientific origins, as well as broader cultural sources. Thirdly, and closely related, arguments against anthropocentrism have often relied on overlooking the work done by earlier historians, including the environmental ones. However, if we want to understand how the human can be taken out of the centre, we must first understand how it came to be central in the first place. As I will show in Chapter 3 in reviewing Fernand Braudel’s work, this was by no means trivial, as it can be argued previous histories had not even put the human in the centre; there was no natural background at all. And yet, in a recent volume dedicated to natural versus human times, the editors take a snapshot of Fernand Braudel’s work in the late 1940s as exemplary for dualistic nature-culture perceptions, and then jump forward almost half a century: ‘since the late twentieth century, things have changed’, for the better, that is.¹⁷

¹⁴ Continuity is relative. The key message of Bonneuil and Fressoz is to emphasise continuity in the (recent) historical roots of the Anthropocene, for mostly the same reasons as I do (though their work does it much more elaborately and evocatively). Still, with respect to my views, they do inflate a certain break, which is understandable as their reference point is scientific ecomodernism which views the new perspective of the Anthropocene as a scientific victory, with a flat-out denial of the damage done by that same science. Thus, their break is rhetorically necessary, but I do argue we also need histories which depart from a more continuous perception, in which the ‘two-cultures’ are inherently entangled.

¹⁵ Chakrabarty has had a particularly strong leaning towards such climate reductionism. He has responded to criticism thereof, but left his binary division of human versus climate agency mostly intact. See: Dipesh Chakrabarty, ‘Whose Anthropocene? A Response’, in *Whose Anthropocene? Revisiting Dipesh Chakrabarty’s ‘Four Theses’*, RCC Perspectives: Transformations in Environment and Society, 2016, 104–14.

¹⁶ ‘Pakistan legt rekening overstroomingen bij het Westen’, *NOS*, 31 August 2022, <https://nos.nl/artikel/2442774-pakistan-legt-rekening-overstromingen-bij-het-westen>.

¹⁷ And proceed to point towards philosophers, not practitioners of history. See: Bergwik and Ekström, ‘Introduction’, 14.

In this thesis, I study cases belonging to that middle ground, between the 1940s and present, charting the past few decades of history writing dedicated to the human-natural past. The relative ease with which the Anthropocene has nestled itself within (post)humanistic thought, shows that it, and related notions, were already deeply humanized. The times of nature have grown more historical, and the times of history more natural.

Charting time's foggy terrain

We must begin by asking how (environmental) historians construct their times in the first place, a particularly difficult problem as time is difficult to grasp, elusive, and foggy; so deep in our daily experience that any cultural representation of time is inherently covered in countless tacit, but meaningful layers. In Chapter 2, I briefly review public debates regarding normative Modern Time – the repressive linear, homogenous and progressive time imposed throughout modernity – and alternative ways of ordering which have been conceptualized the last century, drawing general lessons about time and (dis)order. Next, I make a more focussed literature study of recent research in the field of theoretical history by analysing contributions to a dedicated edited volume and a number of papers. Though theoretical historians univocally acknowledge the historicity of time, most still depart from a silent presumption, similar to the one by posthumanist thinkers described in the previous section, of history's close relation to Modern Time: 'time has a history, and history its time.'¹⁸ From this vantage point, current histories still appear as predominantly organized around ordering time along the modern ruler of conventional chronologies, vocabulary and narrative frameworks. That is, if the contemporary act of writing history is within theoretical historical radars at all.

In studying how environmental historians may have constructed less dualistic nature-culture pictures, we'll thus also need a less essentialist picture of history as concerned with modern order only. I therefore depart from the alternative position: 'times have their histories, and histories their times.' Drawing an analogy to the rethinking of lurking modernity by postcolonial scholars, I tentatively borrow Chakrabarty's term 'provincialization' to view the modern construction of time as a province within a larger landscape (or environment) of history. The resulting methodology used and explored in this thesis has a structuralist flavour; viewing temporality as a construction in a framework of (un)temporalized narrative, chronology, vocabulary, laws and argumentation, seen within a social, cultural and scientific context.

Environmental histories

The current debate on nature-culture divides is by no means new. In fact, the so-called 'great wilderness debate' in the U.S. only recently appeared to have quieted down.¹⁹ American

¹⁸ John Zammito, 'Koselleck's Philosophy of Historical Time(s) and the Practice of History', ed. Reinhart Koselleck, *History and Theory* 43, no. 1 (2004), 124.

¹⁹ J. Baird Callicott and Michael P. Nelson, eds., *The Great New Wilderness Debate* (Athens: University of Georgia Press, 1998); Michael P. Nelson, ed., *The Wilderness Debate Rages on: Continuing the Great New Wilderness Debate* (Athens, Ga.: Univ. of Georgia Press, 2008).

environmental historians played a big part in this occasionally fierce and political debate about a perception of American landscapes that we can now see was deeply dualistic. In this perception, the American land was wild, or even ‘pristine’ before being conquered by colonists. Many political and nationalist histories built on this perception, to establish a view of American superiority grounded in the victory (and protection) of this sublime wilderness. Most American environmental historians thought differently, and carefully established more complex dialectical links between nature and culture, and thus form an excellent case study of the negation of earlier nature-culture divides. All cases are books aimed both at academic and public audiences, as these tend to contain a relatively transparent and coherent temporal character.

In Chapter 3, I further elaborate on the history of “Man vs. Wild” views, and show how its legacy has pervaded into perceptions of storytelling about nature itself. In Chapter 4 and 5, I trace the development of the field itself and the times created within it. From the 1960s onwards, environmental history can retrospectively be said to have been put on track to become a discipline – with its societies, journals and awards – although it remains loosely connected, with scholars intellectually united by a mission to write the human and non-human into American history, and a shared understanding of the environment as a historical category. Taking up this new idea, “the environment”, as a relatively new mechanistic, dehumanized view of human-natural spaces, their analyses provided an alternative narrative to previous dualistic views. Within the ‘big tent’ of environmental history, human-nature relations are studied in diverse ways, including (combinations of) history of culture-ecology, economy-ecology and technology-ecology, as well as histories of ecology or environmentalism.²⁰

I argue that through the environment’s lens, historians explored human-nature relations which were not classically storied, and not temporalized along conventional modern lines. Attentive to the diverse rhythms and processes of environments, the chief occupation of these historians was to investigate the historicity of human-nature relations, rather than impose a modern historicity upon their ecosystem-inhabiting subjects. By treading beyond institutionalized etiquette, all historians received some degree of pushback, though gradually began to fit into growing genres. In particular, Chapter 4 studies how Alfred Crosby’s deep histories created new pasts, with events and processes on a new scale. Chapter 5 discusses the diverse approaches of several environmental historians – William Cronon, Arthur McEvoy and Stephen J. Pyne – who were amongst the first to assume an environmental perspective in the early 1980s. Their attentive practices included types of non-linear storytelling, alternative actors and nonhistorical vocabulary to construct narratives which can best be seen as hybrid of modern and non-modern thought.

Although American environmental historians made significant headway into less-humanized perspectives, this is necessarily an advance from far, departing from a deeply dualistic

²⁰ J. R. McNeill, ‘Observations on the Nature and Culture of Environmental History’, *History and Theory* 42, nr. 4 (December 2003): 5–43, <https://doi.org/10.1046/j.1468-2303.2003.00255.x>, 5; J.R. McNeill, ‘The State of the Field of Environmental History’, *Annual Review of Environment and Resources* 35, nr. 1 (2010): 345–74, <https://doi.org/10.1146/annurev-environ-040609-105431>.

perspective. In Chapter 6, I therefore consider histories written from less binary nature-culture divisions. First, I study landscape history, which integrates human and non-human times organically, though with emphasis on human culture. Second, I analyse a work of historical ecology which shed nature-culture divisions through a manifestly mechanistic outlook, comfortably viewing the human as a natural actor. Finally, I study an approach which explored alternatives to normative modern perceptions of nature by placing itself at the fringes of main-stream economy, where only a scattered, patchy remnant is left of modernity's teleology. Although coming from different directions, I show that these alternative "environmental histories" used similar techniques, a similar attentive standpoint and likewise produced histories with a similar non-modern character as their American environmental historical counterparts.

Naturalizing history, historicizing nature

In his famous 1849 essay 'Nature', Ralph Waldo Emerson remarked, in passing, that 'the whole of nature is a metaphor of the human mind.'²¹ Emerson was one of these men we would now refer to as dualists, driving a wedge between humanity and nature. And still, the main contention of this thesis is that his statement has remained true; the temporalities of human and natural history have evolved in each other's mirror images. We can thus best view the assemblage of "human times" and "natural times" within history as an ongoing and simultaneous historization of nature, and naturalization of history.

The former process has involved a broadening of the times ascribed to nature itself, not just within history, but in society at large. Far from enigmatic, vast and haunting, this thesis shows how nature's times themselves have recently been understood in more friendly human terms, now containing revolutions, cycles and periods, with the Anthropocene as the latest result. Though often being created through the evidence offered by natural and earth scientists, these perceptions have also strongly relied on historical imagination. Meanwhile, the naturalization of history can be understood as the ongoing broadening of historical boundaries, through new types of storytelling, to accommodate diverse environmental times themselves. In contrast to the common belief that history remains a distinctly linear and modern habit, this thesis shows that environmental historians negotiate countless non-linearities in their histories, pushing the boundaries of history well beyond history's province. This has two important consequences.

First, the coupled historization and naturalization implies more continuity than a purely Anthropocene-incited 'ontological collapse'; several current histories clearly rely upon earlier historical innovations. But, secondly, they don't always do so. In pushing the boundaries of history beyond history itself, this thesis shows how effective narratives about the human-natural past have borrowed narrative techniques from elsewhere, such as fiction or even architecture. So rather than an existential soul-searching, I argue that (theoretical) historians seeking to make better sense of current and past changes might derive their temporal frameworks from the broader 'environment of history', as well as from elsewhere.

²¹ Ralph Waldo Emerson, *Nature* (Boston & Cambridge: James Munroe And Company, 1849), 17.

I hope that the core of this thesis shows that my structuralist view of time in history can be productive in comparing the ways scientists, historians and real humans assemble pasts. Though perhaps reductionistic, I believe that time can be a fruitful unit to surmount disciplinary dogmas. In case I haven't showed that convincingly, the final part of Chapter 7 tries harder to drive home the same point.

A point of reflection

Throughout this thesis, except for Chapter 2, I will focus chiefly on environmental history. However, many conclusions can be easily extended to other forms of history. After all, the consequence of the statement that 'times have their histories, and histories their times', is that any 'x history' has a fairly well-defined 'x time'. This includes this thesis itself, an episodic and open-ended intellectual history. On a reflective note, we can question whether the points outlined in this thesis hold up for the thesis itself. Except for the ending of Chapter 7 I will do so only in passing, not keen to stack reflective layers too high.

Chapter 2. Provincializing Modern Time

Decentring the modern in theory of history

Time and Eternity

*Where the woods and ploughlands
of tradition and modernity
run into the never-ending
deserts of eternity,
there I have my daily task,
while time smoothly passes,
spooning the eternal sands
into hour-glasses.*

Piet Hein, *More Grooks* (1969).¹

Introduction

Everywhere you look, you can find traces of many times. All you need to figure out, is *how* to look. A glance upwards at a forest's canopy and you see the coming and going of seasons, or perhaps guess its age. Looking harder, one starts to read a story, with a chapter on the scars from disease or drought, one rising from the ashes of a wildfire and a splintered chapter about storms. Looking harder, longer and more systematic, you start doing “phenology” or “dendrochronology”, reducing the living rhythms of the forest to the formal language of a scientific paper. The subtlety of these times forms a stark contrast to what we can term “Modern Time”: the progressive linear time experienced, articulated and characteristically imposed throughout modernity.² Bruno Latour offers something of a definition:

The moderns have a peculiar propensity for understanding time that passes as if it were really abolishing the past behind it. ... They do not seek that they are removed from the Middle Ages by a certain number of centuries, but that they are separated by Copernican Revolutions, epistemological breaks, epistemic ruptures so radical that nothing of that past survives in them – nothing of that past ought to survive in them.³

¹ Piet Hein, *More Grooks* (London: Hodder Paperbacks, 1969), 2.

² Note that my usage of ‘modern’ throughout this thesis is extremely broad. Many insights can be translated to pre-modern or even ancient cultures. In lovely paradoxical fashion, the fancy to delimit the modern strictly to a post-enlightenment era is of course a modern one. Perhaps we have never been modern.

³ Bruno Latour, *We Have Never Been Modern*, 68.

Modern Time then is linear, homogenous and by definition accelerating, as it breaks from its past. What then would a Modern Historian, in the Latourian sense, make of a forest's past? Not much. Uncalibrated to its delicate times, the historian's revolution-detector will likely stay quiet when probing the forest for large ruptures and breaks. Without revolutions, no time, no history. And yet, a dendrochronologist can spend a career peering through a microscope to grasp the times of trees. Something must be happening.

Of course, the "Modern Historian" is an illusion, a stereotype at best. This thesis attempts to sketch a richer picture of the historian's profession. For decades, historians – not just the environmental ones – have explored methods that piece together the paces and scales of change (or absence of change) in the human and non-human world. And yet, as I argue in reviewing (theoretical) historical literature, a conservative picture persists that views the times expressed by historians as if they held only chronology's ruler to measure the past, and a nineteenth century type of narrative to express it.

The historians' palette is much more coloured, but it only reveals its riches once this idealized picture of historical profession makes way for a more attentive one. Drawing inspiration from Dipesh Chakrabarty's postcolonial studies, I argue a "provincialization" of Modern Time in theoretical history will be more equipped to that end.

As such, this chapter spirals towards an (indirect) answer to my original methodological *desideratum*, which I can retroactively describe as 'an empirical strategy applicable to monographs by American environmental historians, capable of identifying the presence, absence and interaction of multiple temporalities.' I found no such toolbox, ready for use. But I have drawn inspiration from existing discourses concerning time. First, I sketch a brief cultural history of the perpetual conflict between order and non-order in time. Next, I analyse how theoretical historians have grappled with the time expressed by (pre-modern) historians and discuss how, even if productive, many views on time tacitly invoke the modern. Finally, I outline how the following chapters can provincialize these modern times.

A brief cultural history

It is about time to talk about time. Surely, questions relating to time have been well within philosophical radars for eons, yet in recent years, a strong sense of urgency seems to mark the "mapping" and "exploration" of time's foggy philosophical terrain, moving it well into a political arena.⁴ During this thesis project alone, a *Studium Generale* lecture series by Utrecht University was dedicated to the topic. In the same city, the experimental art gallery De Bak organized an exhibition, accompanied by lectures and debates, titled *No Linear Fucking*

⁴ For these ancient philosophical radars, seen through now old-fashioned lenses, see: Stephen Toulmin and June Goodfield, *The Discovery of Time* (Chicago: University of Chicago Press, 1982); Donald J. Wilcox, *The Measure of Times Past: Pre-Newtonian Chronologies and the Rhetoric of Relative Time* (Chicago: University of Chicago Press, 1987).

Time; it need hardly be said the activist exhibition did not appreciate modernity.⁵ Both publicly and academically, time is booming – the modern is not.

It can be argued that this discomfort with the well-ordered accelerating time of modernity has grown in synchrony with all those other accelerations and revolutions jammed into the twentieth century, each contributing to a forever more utopian, more wealthy, more free future. But at what cost? In industrializing societies, clocks became more present in daily life, helpful in putting the employee in a 9 to 5 workflow. Free time was invented, only to imply there was a time apparently unfree. Meanwhile, scientists bolted down physical phenomena to the nanosecond, created better forecasts of futures, whilst the whole concept of a linear and homogenous time melted in Einstein's hands.⁶

Perhaps the experience of time throughout modernity is best seen as an inflation of a number of age-old conflicts between absolute and relative, order and chaos, free and unfree. Figure 2.1 shows several examples by (post)modern artists, who rendered diverging answers to these dilemmas. In providing expectations, a history and routine, time can give meaning and expression to the lives of individuals and communities in endless different ways, but modern societies offer just a few versions, requiring at the very least marriage and career for a truly meaningful life, excluding the possibility of dissent for many. The artworks express the resulting friction, or search for alternatives.⁷

⁵ 'Grip Op Tijd', *Universiteit Utrecht*, accessed 1 September 2022, <https://www.sg.uu.nl/series/grip-op-tijd>; 'No Linear Fucking Time', *De BAK*, accessed 1 September 2022, <https://www.bakonline.org/program-item/no-linear-fucking-time/>.

⁶ Plausible links between Newtonian linear time have been drawn and the gradual development of linear views upon history, see: Daniel Rosenberg, 'Joseph Priestley and the Graphic Invention of Modern Time', *Studies in Eighteenth Century Culture* 36, no. 1 (2007): 55–103, <https://doi.org/10.1353/sec.2007.0013>; Helge Jordheim, 'Making Universal Time: Tools of Synchronization', in *Universal History and the Making of the Global* (Routledge, 2018). Questions about links between Einstein and relative modern time have been, at the very least, raised, see: Wilcox, *The Measure of Times Past*.

⁷ I drew inspiration for this sketch of a cultural history, from Susanna Bloem, 'Hoe "tijd" psychiatrie opnieuw betoverde', *Studium* 10, no. 4 (22 June 2018): 191–210, <https://doi.org/10.18352/studium.10154>; Berber Bevernage and Chris Lorenz, 'Introduction', in *Breaking up Time: Negotiating the Borders between Present, Past and Future* (Göttingen: Vandenhoeck & Ruprecht, 2013), 7–35.



Figure 2.1a: Giacomo Balla, *Dynamism of a Dog on a Leash* (1913)

Trying to overtake time, Balla and other Futurists planned to break with the past by regular acts of violent destruction and reconstruction of basically everything, including art, infrastructure and politics. This would include their own movement, which disintegrated after just a few years.

b: Still from Fritz Lang, *Metropolis* (1927) ([scene on YouTube](#))

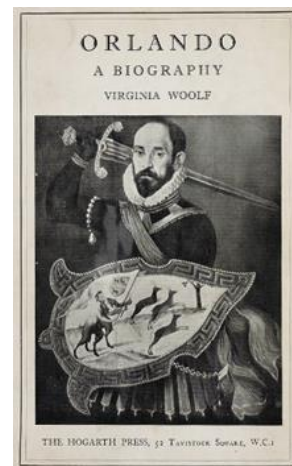
A martyr of industrial time, the exhausted factory worker collapses after a long shift at clock-like machinery. Or is he crucified?

Note the ten hour clock, possibly a nod to French Revolutionary clock and calendar reform.



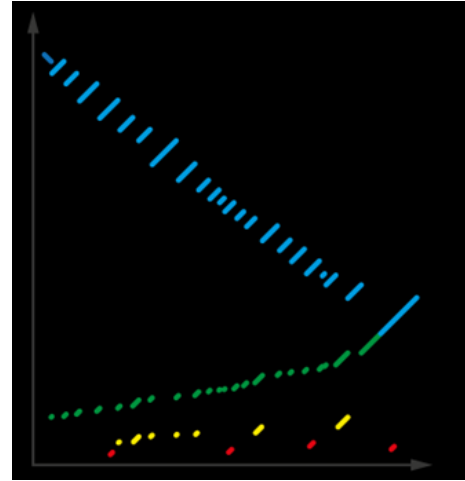
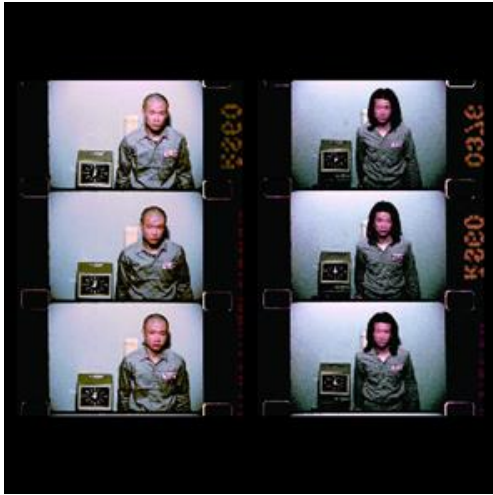
c: Salvador Dalí, *Persistence of Memory* (1931)

Whilst Lang offered head-on critique of modernity's time, Dalí imagined an alternative, dream-like world in which disordered time has become part of an eerie, surrealist assembly. Time may be relative, we are condemned to live in a society treating it as absolute.



d: First edition cover of Virginia Woolf, *Orlando: A Biography* (1928)

One of many contemporary experiments in less-linear storytelling. Famous for inverting the protagonist's gender (including personal qualities and history), the narrative shows how identities are forever reinvented in adaptation to environment. Like the protagonist, Woolf joyfully reinvents the four-centuries-spanning "biography" again and again, breaking the fourth wall and mocking entrenched genres.



e: Shots from Tehching Hsieh, *Time Clock Piece* (1980-1981). Exhibited in the BAK's *No Linear Fucking Time*. ([full video on YouTube](#))

Bringing Lang's and Dalí's depictions of modernity to life, Hsieh, always dressed in a workers overall, punched a time clock every hour for one year.

f: Timeline of Christopher Nolan, *Memento* (2000). Drafted by a Reddit user ([full version](#)).

Nolan is probably the most popular merchant of (very challenging) non-linear film narratives, he can also be criticized for trading action and complexity for proper character design. A structuralist reading would counter that his non-linear storytelling is necessary for capturing the difficulties of living in a linear world to those who can't. E.g. an amnesiac's captivity in the present in *Memento* or a traumatized person's escape to a fictional (dream) past in *Inception* (2010).

The discomfort is not ahistorical: any history of time effectively traces its fluctuations throughout large and small events. For example, in the optimism of booming post-war decades, many happily embraced growth's straightjacket as industrial technologies promised a wealthy, comfortable future for most. Yet, as growth stagnated, this optimist gaze crumbled and many quickly returned to the present, in what we might now call a move towards postmodernism.⁸ 'People aren't interested in the future anymore', one novelist complained in 1970.⁹ Needless to say, it didn't take long for many new futures to be conceived, like a soft technological one which promised more types of times to accommodate the growing number of ways to practice an individualist life, compared to collective times of earlier periods. In the 1960s, a Dutch television viewer had little choice but to retire to bed after the pastor's closing sermon around 11 PM. Some fifty years later, a smartphone's algorithms could keep you

⁸ Alexander C. T. Geppert, 'The Post-Apollo Paradox: Envisioning Limits During the Planetized 1970s', in *Limiting Outer Space: Astroculture After Apollo*, ed. Alexander C.T. Geppert, Palgrave Studies in the History of Science and Technology (London: Palgrave Macmillan UK, 2018), 3–26, https://doi.org/10.1057/978-1-137-36916-1_1.

⁹ J.G. Ballard and Lynn Barber, 'Sci-Fi Seer,' *Penthouse* [UK] 5.5 (May 1970), **quoted in** 'Geppert, The Post-Apollo Paradox.'

company into the late hours with an endless tailormade timeline of digital content.¹⁰ Digitization and emancipation are offering countless ways of ordering one's time, but the friction between the ordered and the free remains.

It might even seem worse than ever. With the limits to growth exceeded, progression somewhere has been shown to mean degression elsewhere, and as "crises" ostensibly mushroom ever more frequently – a financial crisis, COVID crisis and looming global climate crisis – the modern is losing its lure.¹¹ Briefly, the limbo of the COVID pandemic made bright futures evaporate, and antithetical to modern faith in progression, the recent U.S. Supreme Court ruling to overturn abortion rights has shown that times can, sometimes, run backwards.¹²

So what's the alternative? An all-out inversion is tempting. Take *No Linear Fucking Time* which explored 'how looking and working beyond linear, progressive, and globally-synchronized time can contribute to a more plurally-determined and sustainable existence ... in order to imagine escapes from the programmatic movement of capitalist modernity toward ostensibly inevitable catastrophe.'¹³ The somewhat bitter, anti-modern exhibition paradoxically sought to break with its own past, a rather typical case in which radical rejection of modernity results in a reversion only. Latour, critical of modernity but even more eager to scold bands of anti- and postmoderns, remarks:

For the moderns – as for their antimodern enemies, as well as for their false postmodern enemies – time's arrow is unambiguous: one can go forward, but then one must break with the past; one can choose to go backward, but then one has to break with the modernizing avant-gardes, which have broken radically with their own past.¹⁴

Another alternative would be the non-modern. Requiring a non-linear, non-teleological, inhomogeneous and disordered way of thinking, the truly non-modern time is obviously well beyond our grasp, as time is organized not just within social and political frameworks, but also into the very fabric of our thought, as attentive linguistic analysis can show.¹⁵ Like the modern, the "non-modern" is an ideal type. But reality is hybrid. So although cyclical and stagnant expressions of time have been identified in pre-modern and indigenous cultures, even there we should expect to find a mixture of order and non-order, which might taste very modern after all.¹⁶

¹⁰ 'Dagsluiting', *Beeld En Geluid*, accessed 1 September 2022, <https://wiki.beeldengeluid.nl/index.php/Dagsluiting>.

¹¹ Ruben Ros, 'De opkomst van de "nationale ramp": Een begripsgeschiedenis', *De Moderne Tijd* 4, no. 3–4 (1 January 2020): 165–86, <https://doi.org/10.5117/DMT2020.3-4.002.ROS>.

¹² 'Hof plaatst VS met abortusuitspraak een halve eeuw terug in de tijd', *NRC*, 24 June 2022, <https://www.nrc.nl/nieuws/2022/06/24/hof-plaatst-vs-met-abortusuitspraak-een-halve-eeuw-terug-in-de-tijd-a4134622>.

¹³ *De Bak*, 'No Linear Fucking Time'.

¹⁴ Latour, *We have never been modern*, p. 69.

¹⁵ William Gallois, *Time, Religion and History* (Harlow: Pearson, 2007).

¹⁶ For example, Shazdad Bashir has called upon historians of Islam (including himself) to rethink existing histories which have departed from an assumed diffusionist perception of historical

Fortunately, recent histories of time have taken a more productive standpoint than earlier searches for ideal types, approaching their topic attentive to the friction between the order and the chaos of daily reality.¹⁷ In theoretical history this search is emerging too, though facing difficulties because of an entrenched and rigid attitude that ‘time has a history, and history its time.’¹⁸

Historical times in theory of history

Theoretical history as a field, or historiography as a mode of inquiry, is surprisingly late to study the times wrought by historians. A recent landmark volume *Breaking up Time* (2013), edited by Berber Bevernage and Chris Lorenz, and a wealth of papers in the journals *Rethinking History* and *History and Theory* have aimed to close that gap. Bevernage and Lorenz have lamented that for most historians, the question “‘Is time historical?’ – is a weird one, because ... they simply *identify* history with time or with temporal change and take it for granted that time is somehow “real.”¹⁹ As the contributions to their volume show, the times constructed by historians in their narratives and the times conceptualized in theories of history are indeed deeply contingent; there is no universal time employed by historians. Taking up the lead of this volume, I briefly summarize several contributions and unpack their strategies in order to tease out lessons for the method applied in this thesis.

In *Breaking up Time*, contributors were asked to reflect upon the historical experience, representation and deployment of time (and its control) within societies in general and by historians specifically.²⁰ I will focus on contributions which emphasized the latter part, the times constructed by historians. Though agreeing roughly on the historicity of time, answers were composed along vastly different methodological lines. A number of contributions took mostly historiographic approaches, but each fanned out into interesting terrain away from

imagination in Islamic regions, a type of othering which stemmed from nineteenth century historical discourse. See: Shahzad Bashir, ‘On Islamic Time, Rethinking Chronology in the Historiography of Muslim Societies’, *History and Theory* 53, no. 4 (December 2014): 519–44, <https://doi.org/10.1111/hith.10729>.

¹⁷ E.g.: Stella G. Souvatzi, Adnan Baysal, and Emma L. Baysal, eds., *Time and History in Prehistory* (Abingdon, Oxon ; New York, NY: Routledge, 2018); Kären Wigen, Caroline Winterer, and David Rumsey Map Center, eds., *Time in Maps: From the Age of Discovery to Our Digital Era* (Chicago ; London: The University of Chicago Press, 2020); Dan Karlholm and Keith Moxey, eds., *Time in the History of Art: Temporality, Chronology and Anachrony*, First issued in paperback 2020, Studies in Art Historiography (London New York: Routledge, Taylor & Francis Group, 2020).

¹⁸ Zammito, ‘Koselleck’s Philosophy of Historical Time(s) and the Practice of History’, 124.

¹⁹ Lorenz and Bevernage, *Breaking up Time*, 17. Regardless of time’s ontological status, one might ask whether it’s a productive category to begin with, not just a path towards regular historiography, disguised in a cloak of objectivity through a natural scientific term. I would counter that the term, despite its immense breadth, contains analytical power for transdisciplinary history because it has the ability to integrate histories, as it penetrates boundaries between the individual and collective, esoteric and trivial. Put differently, it has the power to demystify history from its artistic realm, dissolving two-cultures debates. To do so constructively might require a level of conceptualization that is currently lacking, more about this further below.

²⁰ Lorenz and Bevernage, *Breaking up Time*, 9.

purely professional history. Sanja Perovic's chapter discussed a historian's attempt at revision of chronology in the wake of French Revolutionary calendar reform. She then moved on to make a sociological argument on the influence of transformative events for a person's lived time, as it demands an often painful reimagining of a projected future and past.²¹

Stefan Tanaka's chapter also dealt with a disruptive event, discussing professional history in the late-nineteenth-century modernization of Japan. Tanaka looked into Japanese works of history, supportive institutional infrastructure and explicit rethinking of historical imagination, with particular emphasis on the periodization proposed in these sources. Here he traced the arrival (and independent development) of Modern Time in Japan in relation to the formation of the nation state, and showed how religious and moral values were negotiated along with modernist fancies as traditional and new histories clashed. The result: a pragmatic fragmentation of both archetypical modern periodization as well as traditional historical imagination in an attempt to save the moralism of the latter, as well as saving the utility of modern history as a technology of power.²²

Tanaka and Perovic thus show how actors' responses to transformative events are particularly indicative of cultures of time, as the confrontation is paired with a vocal rethinking of tacit standpoints. In a less historiographical vein, Peter Fritzsche's chapter instead forwarded material objects as a focal point for confrontations of different times, studying ruins and their perception diachronically in France between the seventeenth and nineteenth centuries. Bearing the scars from violent times, the styles of outmoded fashions and simply the mosses of a long natural past, ruins form singular points in which many pasts converge. Any encounter with ruins, is thus a confrontation with these many pasts.²³

Note that although Fritzsche's paper took ruins as a an empirical starting point, his route was brought him into a more generic realm, eventually ending at a statement of the socio-political role of historians. Despite its empirical starting point, his article belonged to the volume's set of articles on (applied) philosophy of history, not all of which have boots on empirical ground.²⁴ For example, Jonathan Gorman developed a theory of historical time through the eyes of several usual philosophical suspects, dispatching Kant, Heidegger, Berlin and Quine within the space of a few pages.²⁵

We find a very different methodological approach by taking a small excursion away from Bevernage and Lorenz's volume, to Reinhart Koselleck's conceptual histories, published

²¹ Sanja Perovic, 'Year 1 and year 61 of the French Revolution' in *Breaking up Time*, 87 – 108.

²² Stefan Tanaka, 'Unification of time and the fragmentation of pasts in Meiji Japan' in *Breaking up Time*, 216 – 236.

²³ Peter Fritzsche, 'The Ruins of Modernity' in *Breaking up Time*, 57 – 68. Although not discussed here, any recent mentioning of time and ruins is methodologically indebted to François Hartog's *Regimes of Historicity*, probably the most widely read contribution to the field in the past few decades (but debatable, see Paul's article in the next note).. See: François Hartog, *Regimes of Historicity: Presentism and Experiences of Time*. Translated by Saskia Brown. Columbia University Press, 2015.

²⁴ Note that the lack of empirical character is rather typical for the field, see: Herman Paul, 'Wat is presentisme? Over historische cultuur in de 21e eeuw', *Tijdschrift voor Geschiedenis* 134, no. 1 (1 June 2021): 109–17, <https://doi.org/10.5117/TVG2021.1.008.PAUL>.

²⁵ Gorman, Jonathan, 'The Limits of Historiographical Choice in Temporal Distinctions', in *Breaking up Time*, 155 – 175.

between the 1970s and 1990s.²⁶ Koselleck can be seen as an intellectual father of most theoretical historians discussed here, having put the question of time within history on the map by tracing the “semantics of historical time.” Rooted in his well-defined conceptual historical methodology, Koselleck argued that the emergence of Modern Time can be traced to the period between 1750 and 1850, observed best in a steep rise of neologisms containing *Zeit* itself, which were frequently deployed by historians, such as *Zeitgeist* and even *Neuzeit* (modernity), displaying how time gained a new meaning and urgency in this period. Yet Koselleck did not limit himself to semantics only, spending much of his career developing a holistic stratigraphical theory of historical time as well.²⁷ In emphasizing the multiplicity of times, which are always extant within cultures, Koselleck has contributed much to the historization of the concept within theoretical history.

A few observations in my quest for a methodology. Firstly, we find a wide range of more or less commensurate empirical and ontological angles in these papers. For example, Perovic’ and Tanaka’s articles fluidly moved from clocks and calendars to arguments about historical imagination; an obvious, but by no means trivial connection to make. In contrast, in Koselleck’s linguistic approach to the same connection between societal events and personal experience is more natural, automatic almost. I could multiply examples, but the lesson is clear: the times expressed by historians can combine social, technological and cultural times, in combination with psychological and sociological times, but *how* this is done is by no means settled.

Secondly, studies of the times expressed in the works of historians themselves, the books and articles written, are rare. A detour is usually taken, or one aspect is zoomed in upon, for example by focusing on periodization.

Thirdly, conceptualization is rare. For a small field with a big topic, this may not be surprising, but it is indicative of a relative lack of concrete conceptualization within the time studies in general. Most authors depart and return to the safe but broad haven of Koselleck or Heidegger, resulting in little development of time-specific terminology within theoretical history, or any other scholarly field for that matter.

Finally, the big omission: I have encountered no studies of the times manufactured by historians after the 1950s, and very few after 1900.²⁸ This connects to a bigger theme: the modern in history.

²⁶ Reinhart Koselleck and Keith Tribe, *Futures Past: On the Semantics of Historical Time*. (New York: Columbia University Press, 2005), <http://www.mylibrary.com?id=287186>.

²⁷ Koselleck’s layered view of language’s histories was a carbon copy of, and indeed directly inspired by, Braudel’s tripartite division, which I will discuss in the next chapter. The same appears to be true for Koselleck’s larger theory of history. Reinhart Koselleck, *Sediments of Time: On Possible Histories, Cultural Memory in the Present* (Stanford, California: Stanford University Press, 2018). Whether Koselleck’s stratigraphical metaphor is apt is a matter of tenuous debate, see Chris Lorenz, ‘Probing the Limits of Metaphor: On the Stratigraphic Model in History and Geology’, 2020, <https://doi.org/10.13140/RG.2.2.32490.75204>.

²⁸ Arguably Bashir’s article, discussed in note 16 of this chapter, is an exception. Bashir, ‘On Islamic Time.’ William Gallois’ experiment in writing “Zen History” indirectly touches on similar themes, see

The modern bubble in history

The peculiar disregard for recent works of history in theoretical studies appears to be part of a general empirical problem in the field,²⁹ and can be traced to a seemingly univocal, but tacit, assumption of history as a modern endeavour. In this implicit picture, history may not have ended, the history of its methodology has, and therefore the temporalities created are a done and dusted matter. This makes sense to a certain degree. In its mission to collect, order and interpret “the past as it actually happened” or “the past as a different country”, the highest goal writing histories is to assemble the past such that it perpetually breaks away from the present and future. This is true for all of “history,” including its manifestation in museums, archives and heritage.³⁰ Depending on one’s standpoint, the exploration of the non-modern in history is useless, or even contradictory.

In theoretical history this picture appears to be taken up, and then inflated into a conceptual bubble that is, unfortunately, almost translucent, with assumptions often unspoken. A common instance when this bubble briefly turns opaque is in ‘conflating time with chronology,’³¹ and the representation of chronology through periodization, as we already saw in Perovic’ and Tanaka’s articles. The very notion of modern history can arguably be traced to a slackening relation between absolute chronology and history itself. Cue Kant’s ironical response to a chronographer bending over backwards to rescue Creation: ‘als ob sich nicht die Chronologie nach der Geschichte, sondern, umgekehrt, die Geschichte nach der Chronologie richten müßt.’³² And yet, the historian’s craft is still often portrayed as if it does little but break up time, to make epochs become a stand-alone reality. Take a 2004 overview of Koselleck’s scattered designs of a theory of history, in which John Zammito declared that ‘most appealing for practicing historians is the measure to which Koselleck’s formal theory of historical time points ultimately to *periodization* as the fundamental theoretical domain for historical practice.’³³ That is not to say that a single periodization gets centre stage. A recent cascade of articles in the journals *History and Theory* and *Rethinking History* put chronology in the analytical focal point, by seeking how chronological infrastructures are

William Gallois, ‘Zen History’, *Rethinking History* 14, no. 3 (1 September 2010): 421–40, <https://doi.org/10.1080/13642529.2010.482799>.

²⁹ Paul, ‘Wat is presentisme’. For the rift between theories of history and various forms of deep or big history specifically, see: Stella G. Souvatzi, Adnan Baysal, and Emma L. Baysal, eds., *Time and History in Prehistory* (Abingdon, Oxon ; New York, NY: Routledge, 2018), 1 – 28; Jo Guldi and David Armitage, *The History Manifesto* (Cambridge, United Kingdom: Cambridge University Press, 2014).

³⁰ Aleida Assman. ‘Transformations of the Modern Time Regime’. In *Breaking up Tim*, 39 – 56.

³¹ Stefan Tanaka, *History without Chronology* (Lever Press, 2019),

<https://doi.org/10.3998/mpub.11418981>, 1. Tanaka’s book is a rare diagnosis of the conceptual preoccupation of theoretical historians with chronology (and Modern Time at large) from within. Moreover, the book’s quest highlights the difficulty of research into the topic itself. Tanaka is self-reflective, admitting that he rarely avoided chronology in his own histories, both in his own ordering as well as interpretively, as we saw in the article above. Unfortunately, Tanaka’s work has only a minor empirical footing, and argues chronology is becoming ever more manifested in histories, something that this thesis contends.

³² Jordheim, ‘Making Universal Time’, 139.

³³ John Zammito, ‘Koselleck’s Philosophy of Historical Time(s) and the Practice of History’, 134–35.

reconfigured in response to the growing realization of the existence of “multiple temporalities” (the term generally used to refer to the coexistence of multiple, non-synchronous temporalized histories).³⁴ Here the newest problem is the quest to swallow up the Anthropocene. Multiscalar temporalities, the proposed answer by Chakrabarty and others, conveniently leave human chronologies untainted by nesting them in the new geological one.³⁵ One more example: in a response to accusations of “decadology” in a volume on the 1970s, the editor countered that historians are ‘well aware of their periodizations’ artificial character, necessitated by professional pragmatism to come to terms with change over time.’³⁶

But attentiveness to periodization suggests just one type of change, that of the perpetual rupture. At least, that’s the way it might seem, but of course, no periodization is completely atomic, so even a periodization contains moments that are by definition practically flat (Kuhn ‘normal science’, for example), undermining the very idea of modern history as necessarily accelerating only. And this is just conventional history, when we are attentive to the non-modern, we’ll be able to see much more. This, I argue below, requires a change of mind.

Towards a provincialization of Modern Time

Looking for hybrid expressions of time, we are thus caught in a crossfire. On the one hand, we have critics of modernity, who shoot at anything with a vague modernist smell. On the other hand, we have fascinating theoretical studies which are capable of seeing the modern only. And to make matters worse, the two camps overlap.

There’s probably no way to depart from modernity’s circle, but we can decentre it. To understand how this may be done, I draw some inspiration from Dipesh Chakrabarty’s postcolonial work, which has dealt with a problem structurally congruent to the one here.

³⁴ Jordheim, Helge. ‘Against Periodization: Koselleck’s Theory of Multiple Temporalities’. *History and Theory* 51, no. 2 (May 2012): 151–71. <https://doi.org/10.1111/j.1468-2303.2012.00619.x>; Jordheim, Helge. ‘Introduction: Multiple Times and the Work of Synchronization’. *History and Theory* 53, no. 4 (December 2014): 498–518. <https://doi.org/10.1111/hith.10728>; Landwehr, Achim, and Tobias Winnerling. ‘Chronisms: On the Past and Future of the Relation of Times’. *Rethinking History* 23, no. 4 (2 October 2019): 435–55. <https://doi.org/10.1080/13642529.2019.1677294>; Hearn, Mark. ‘The Fin de Siècle and the Multiple Temporalities of Historical Periodization’. *Rethinking History* 26, no. 1 (2 January 2022): 32–50. <https://doi.org/10.1080/13642529.2022.2031802>.

³⁵ Chakrabarty, ‘Anthropocene Time’; Zoltán Boldizsár Simon, Marek Tamm, and Ewa Domańska, ‘Anthropocenic Historical Knowledge: Promises and Pitfalls’, *Rethinking History* 25, no. 4 (2 October 2021): 406–39, <https://doi.org/10.1080/13642529.2021.1985224>.

³⁶ Geppert, ‘Post-Apollo Paradox’, 6.

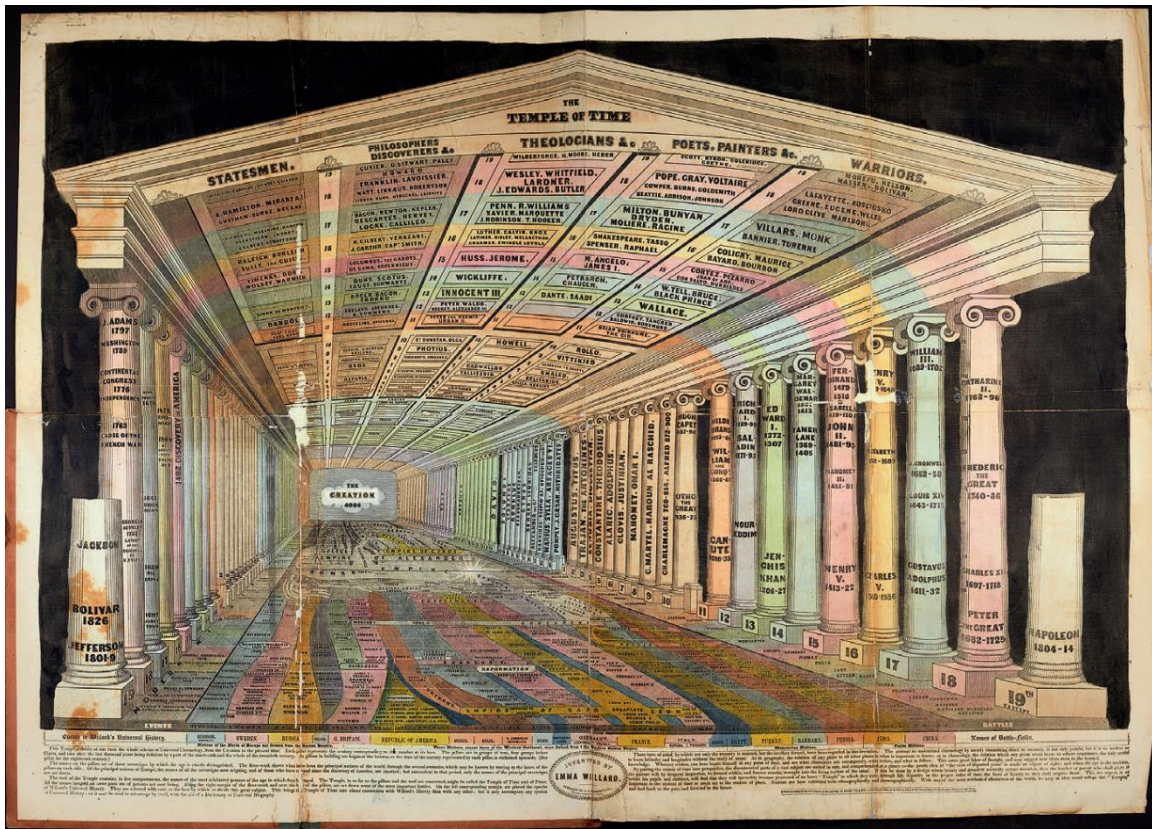


Fig 2.2: Emma Willard, *Temple of Time* (1846)³⁷

Willard's 'invention' of depicting chronological time in a temple is perhaps the epitome of modernity. Such depictions are also close to extinction in current history writing.

In *Provincializing Europe*, first published in 2000, Chakrabarty delved into the hidden traces of European Enlightenment thought. Despite being schooled far away from Europe, Chakrabarty recognized that his intellectual baggage was massively indebted to this tradition, and admitted that it had been 'indispensable' for his own earlier critiques of injustice towards the oppressed, even if that injustice had used a 'universal and secular vision of the human' in justifying acts of oppression and colonialism.³⁸ The act of provincialization is to view

³⁷ From: Caroline Winterer, 'The First American Maps of Deep Time', in *Time in Maps: From the Age of Discovery to Our Digital Era*, ed. Kären Wigen, Caroline Winterer, and David Rumsey Map Center (Chicago ; London: The University of Chicago Press, 2020), 154. For a more focusses essay on the same author, see: Susan Schulten, 'Emma Willard's Maps of Time', *The Public Domain Review* (blog), 2020, <https://publicdomainreview.org/essay/emma-willard-maps-of-time/>.

³⁸ Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference*, Princeton Studies in Culture / Power / History (Princeton: Princeton university press, 2007), 4. In *Provincializing Europe*, the most concrete "conceptual gift from the nineteenth century" is historicism, "the idea that to understand anything it has to be seen both as a unity and in its historical development." (p. 6). Here Chakrabarty refers exclusively to a political form of historicism, used to motivate imperialism. Chapter 5 of this thesis can be said to provincialize a broader conception of historicism.

European thought from the pluralistic vision of the othered local “margins” of thought, and to consider how these have historically collided and coalesced with European thought. A critical standpoint can remain, but a provincialization always requires a ‘recognition of a deep – and often unknown – debt to European thought.’³⁹

I propose Modern Time should be similarly recognized as a province of historical thought, such that we can begin to cross borders into other, potentially less modern, forms of thinking about history. The landscape of temporal expression is richer; it also includes semantics, storytelling and graphics, and historians dwell in each of these realms. Provincializing Modern Time means departing from the assumption that each of these various regions may be central, or none at all. Additionally, the analogy instructs us to make a similarly reflective move as Chakrabarty does, scrutinizing the modern in one’s own thought. In this thesis, it involves an ongoing encounter with a tendency to write in a Rankean fashion, a point I will return to later. It should also be clear that we’ll always fall short in provincializing; there will inevitably be moments when the modern shines through, no matter how many reflective layer are piled up. Systematically modern are the analytical tools I describe below, which are indebted to modern thought and will therefore always detect ordered times better than disordered. However, I make an attempt to spot these assumptions throughout this thesis, with special emphasis on the role of narrative and, to a lesser extent, chronology.

So, the rudimentary toolbox I use (and explore) in this thesis is still indebted to methodologies in Lorenz and Bevernage’s volume for the boundary work of pre-modern historians, but applies it to recent historians. I try to treat them as if they were regular people, starting from the standpoint that time is a social and cultural phenomenon, and therefore that it has a history which exists within a complex web of political, scientific and cultural histories. As opposed to the dogmatic view that ‘time has a history, and history its time’, I argue we should begin from the more pluralistic standpoint: ‘times have their histories, and histories their times.’

Clearly, for a project researching time in literate expressions, a methodology (inspired by conceptual history) of tracing the use of semantics must be in one’s scope. Possible forms are the truly conceptual historical, thorough hermeneutics or a quantified digital approach, but each is beyond the scope of this research. Rather, I will unsystematically draw attention to vocabulary, neologisms specifically, and the usage of evidently temporalized terms. These include the familiar *-ations* and *-isms*, but any text packed with more subtle temporal indicators: for example, for a person travelling westwards across the Atlantic ocean – or alternatively, as we’ll see, the Atlantic ‘seam of Pangaea’ – in the sixteenth century, we can use terms such as colonist, conquistador or settler, each of which has a different temporal locality and structure.⁴⁰

³⁹ *Ibid.*, xiii.

⁴⁰ Crosby’s ‘seams of Pangaea’, or any similar case I will highlight, can be seen as straightforward forms of ‘conceptual grammars’, emphasized to be important in climate discourse by Bonneuil and Fressoz, see: Bonneuil and Fressoz, *The Shock of the Anthropocene*, 160 – 184.

This ties in with another temporal tool, because historical terms are never just terms, but may represent an author's commitment to historical periodisations, which stack chunks of times in unique ways. Chronologies might not be chiselled into marble anymore, as in Willard's *Temple of Time* in Figure 2.2, but still an ontological commitment to a chronology may persist within a history, as if it has an external reality away from the narrative. I will therefore occasionally point towards chronological structures, but remain attentive to the moments when they appear and fade. Moreover, we should keep in mind not just that multiple chronologies may interact or can be nested within one another, but also come in multiple types, which are punctuated heterogeneously by events, revolutions, processes, trends, etc. This provincialized view of chronology is somewhat broader than the rigid one generally used in theoretical histories. In Chapter 4, I will elaborate on the stratification and self-strengthening character of chronology.

When chronology fades, we'll sometimes see a specific ontological unit gain more prominence: the "law", which stands out precisely because of its supposed objective and universal character. Laws have a variable temporal structure and come in many forms, folkloristic or historicist, but within this thesis ecological and evolutionary laws are particularly relevant. Environmental historians invoke them frequently, sometimes tentatively, sometimes rhetorically. Chapter 5 will look into how laws are used and gain a symbolic meaning.

Finally, often in this thesis I will draw attention to the role of narrative in ordering time, but in Chapter 3 I will do so with particular emphasis. There I will argue how traditional views of narrative obscure other provinces of less teleological storytelling common in histories.

A word on terminology

Though I have pointed out that time studies appear to be hampered by a lack of conceptualization, this thesis makes little attempt to close that gap as the structuralist view of temporality is itself too embryonic to warrant any terminology. That said, for the sake of clarity, in the following a distinction between time and temporality will be drawn inspired from Latour's statement in *We Have Never Been Modern*:

The modern passage of time is nothing but a particular form of historicity. ... Let us call the interpretation of this passage temporality, in order to distinguish it carefully from time.⁴¹

In other words, time is used to refer to those things tasting of the natural scientific or metaphysical. Temporality on the other hand, mostly used when referring to works of historians, is the textured expression of such an abstract concept. Temporality then, is a quality of object or a tool.

⁴¹ Latour, *We Have Never Been Modern*, 68.

Chapter 3. A place made of stories

Narrating nature in early environmental histories

My name is growing all the time, and I've lived a very long, long time; so my name is like a story. Real names tell you the story of things they belong to in my language, in the Old Entish as you might say.

'Treebeard' in J.R.R. Tolkien, *The Two Towers* (1954).¹

Introduction

In a 2006 episode of his TV adventure show *Man vs. Wild*, British former marine Bear Grylls faced a dangerous challenge. Stranded on Mount Kilauea – 'one of the most active volcanoes in the world' – fields of molten lava and noxious gasses separated him from "civilization" – and a cosy bed. Some serious hardship followed until eventually, boots on fire, the exhausted Discovery Channel presenter made it out alive, with a rekindled 'healthy respect for the power of nature', ready to face even bigger challenges.² Soon after the series was broadcasted, Grylls faced a very different challenge: television critics, who revealed that the volcano's fire had been spiked with coal, the dangerous fumes had come from smoke machines and Grylls had slept in a comfortable bed in between filming days.³

Grylls' staged escape brings to mind Henry David Thoreau's *Walden* (1854), an account of a two-year experiment of solitary life in the woods, in which Thoreau took some liberty to overdo the degree of isolation and wilderness of his surroundings.⁴ Despite their immeasurable differences, both men idealized Nature as a transformative place, where Man, corrupted by society into a needy shell of his former self, can come for personal growth, physically as well as mentally. And their stories matter: both inspired masses to seek out a simpler, more self-reliant life in the wild.⁵

¹ J.R.R. Tolkien, *The Two Towers* (London: George Allen & Unwin, 1954), 213.

² 'Mount Kilauea', *Man vs. Wild* (Discovery Channel, 1 December 2006).

³ Robert Booth and Dipesh Gadher, "Coal Tipped into Volcano" for Fake Grylls Film', accessed 2 September 2022, <https://www.thetimes.co.uk/article/coal-tipped-into-volcano-for-fake-grylls-film-xpbrvzkr6wy>; Re: *Man Vs. Wild, Bear Grylls Is a Phony*, 2007, <https://www.youtube.com/watch?v=3UpSlpvl1is>.

⁴ Reactions to Thoreau have been more critical than justified though, see: W. Barksdale Maynard, 'Emerson's "Wyman Lot": Forgotten Context for Thoreau's House at Walden', *The Concord Saunterer* 12/13 (2004): 59–84.

⁵ For example, Krakauer draws parallels and direct lines of influence of Thoreau on his unfortunate subject Chris McCandless, see: Jon Krakauer, *Into the wild*, 1st ed (New York: Villard Books, 1996).

They have not been alone. From myths to the Frontier Thesis, and from the national-socialist *Blut und Boden* ideology to nineteenth century explorers' best-selling reports; all can be said to have been built upon, and constructed a structurally similar idealized reality destined to enduring clashes between the human and nature.⁶ Being told and retold, these stories implant an imagined *and* perceived reality sorted into beginnings, middles and ends, sculpting human-natural worlds with a peculiar temporal structure of transformations. In this societal echo chamber, time takes the shape of stories, being measured, to paraphrase Latour, not in years but in the number of victories or defeats on the battleground of wilderness.

The first aim of this chapter is to place (the forerunners of) environmental historians into such an echo chamber, to discern how their narratives reverberated with their imaginative world which was, just like the one Grylls and Thoreau tapped into, deeply storied. I will do so based on an article by environmental historian William Cronon, reviewing the storied reality of early (American) environmental history, and its precursors, which were heavily influenced by the Frontier Thesis, even if authors pushed back. The second aim of this chapter is at a somewhat higher "meta-level", for it is not just the reality that becomes storied, but the idea of change in reality itself when stories pile up. The golden days of naturalism and romanticism might be far behind us, but their legacies linger on at a conceptual level. I will show how Cronon's conceptual views of the history remained deeply ingrained by a rigid teleological view of storytelling. In fact, the story runs so deeply in Cronon's thought that we could speak of a storied cosmology of history. Rethinking time in history thus involves rethinking this rigid framework. As such, this chapter is a case study of one structural element of historical temporalities, namely the narrative, and argues how a provincialized view thereof, in tandem with other temporal markers, can open one's eyes to the richer temporal landscape of history.

The American vs. The Wild

It is not hard to see that the general "Man vs. Nature" theme formed a key foundation for the work of American environmental historians. The trouble with foundations is that they are under ground, and only gradually did authors realize that their work could, in fact, find steady ground elsewhere. So, ironically, the works which helped decentre dualistic Man vs. Nature perspectives within professional history carry references on their blurbs to awards dedicated to the very authors which helped instil this essentialist view in the American mind in the first

⁶ For a cultural history of the shaping of a storied imagination of "the wild" (the poles specifically), nicely into beginnings middles and ends, by British explorers, see: Francis Spufford, *I May Be Some Time: Ice and the English Imagination* (New York: Picador / St. Martin's Press, 1997). For mythology, see for example: Joseph Campbell, Bill D. Moyers, and Betty S. Flowers, *The Power of Myth* (New York: Anchor Books Doubleday, 1991); Or, for *Die Hard* as a religion, check out the latest *Rick and Morty* episode: 'Rick: A Mort Well Lived', *Rick and Morty*, 11 September 2022.

place, such as Ralph Waldo Emerson or George Perkins Marsh, or they discuss the views of Thoreau or Frederick Jackson Turner.⁷

Though diverse, these nineteenth century authors helped shape cultural identities of America and the American (white of course).⁸ Turner's influential Frontier Thesis pushed a view of American superiority founded upon conquests of the country's great wild boundaries, collecting values such as democracy and liberalism as the riches of the lands were extracted (handily forgetting the massacre of Indigenous Americans).⁹ Transcendentalists Emerson and Thoreau forwarded somewhat congruous individualist ideas, which explored how withdrawal to the wild led to personal growth and self-reliance, though they knew their limits as civilized men, giving the American a pastoral dwelling ground in a period when urban and wild poles rapidly parted.¹⁰ These views thus derived their force from a tension persisting between true wilderness – static, vast, perfect – and a naturalistic view of the American as dynamic and adaptive actor. This highly asymmetrical relation was fertile soil for stories, as well as moralities. After all, by the pushing of these frontiers static nature was clearly under threat, making the transcendentalists influential among (early) environmentalists.¹¹

Cronon vs. Wild

American environmental historians were unavoidably influenced by this legacy, which they built upon and eventually helped topple. Roughly put, early works in the 1970s simply filled the voids left open by historians who had focused on human society, and had been less sensitive to precise changes in environments or human perception thereof. As dynamical ecological models gradually replaced simpler static ones, so too did environmental histories from the 1980s onwards, promoting a more complex reciprocity between humanity and nature, which can be said to have slowly shed the pre-established tension between Man and Nature, as we'll see in the coming chapters.¹²

⁷ Emerson prize 1987: Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, Studies in Environment and History (Cambridge University Press, 1986); Turner award honorable mention 2007: Aaron Sachs, *The Humboldt Current: Nineteenth-Century Exploration and the Roots of American Environmentalism* (Penguin, 2007); Francis Parkman Prize 1984 and takes on Thoreau: William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England*, 1st ed (New York: Hill and Wang, 1983); George Perkins Marsh Prize 1989, 1993: Arthur F. McEvoy, *Fisherman's Problem. Ecology and the Law in the California Fisheries 1850 - 1980* (Cambridge University Press, 1986); William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: Norton, 1992).

⁸ Roderick Nash, *Wilderness and the American Mind*, 4. ed. (New Haven, Conn.: Yale Univ. Pr., Nota Bene, 1967).

⁹ Lacy K. Ford, 'Frontier Democracy: The Turner Thesis Revisited', *Journal of the Early Republic* 13, nr. 2 (1993): 144–63, <https://doi.org/10.2307/3124083>.

¹⁰ Maynard, 'Emerson's "Wyman Lot"', 76.

¹¹ Isenberg describes how nineteenth century accounts of wilderness revived from the 1950s onwards, with, for example, Aldo Leopold's land ethics strongly indebted, see: Andrew C. Isenberg, 'Historicizing Natural Environments', in *A Companion to Western Historical Thought* (John Wiley & Sons, Ltd, 2002), 372–89, <https://doi.org/10.1002/9780470998748.ch20>.

¹² Isenberg, 'Historicizing Natural Environments'

Caught between both leftist and conservative environmental movements, as well as a more “neutral” scientific background, environmental historians carefully negotiated earlier dualism, and few would occupy manifestly activist positions. William Cronon is one of few exceptions.¹³ A strongly reflective author, Cronon’s evolving ideas provide direct insight into public debates over nature-culture perceptions from the 1980s onwards, and he had made it his life-work to challenge essentialist Man versus Wild views. More than he himself had predicted, his 1995 paper titled ‘The Trouble with Wilderness’, published in the journal *Environmental History* and as an opinion piece in *The New York Times*, was received as ‘heretical.’¹⁴ The articles challenged the common view of the pre-Columbian Old World as a wild, untainted place, instead arguing that indigenous peoples had had a significant impact upon the landscape. By extension Cronon directly undermined the legacy of Turner and Thoreau’s constructed ‘myths.’¹⁵ Wilderness as a human construction didn’t go well with environmentalists who sought to protect it, and Cronon became the centre of a hostile ‘great wilderness debate’,¹⁶ making him one of few environmental historians to have been scoffed for being a postmodernist by conservatives.¹⁷

As we’ll see in subsequent chapters, Cronon’s earlier work had already explained how specific ecological circumstances had deceived colonizers (and Thoreau) to think of the Old World as wild. But Cronon seems to have underestimated the degree to which the legacy of the wild had worked its way into the way even he himself looked at nature, as becomes particularly clear through his impactful 1992 article ‘A Place for Stories: Nature, History and Narrative.’¹⁸

Tragedies vs. Epics

‘A Place for Stories’ was directly motivated by Cronon’s postmodernism-incited concern regarding environmental history, a field in which, according to Cronon, the problem of bias was ‘particularly difficult.’ This observation appears to be a legacy of nature perceived as a

¹³ The most notable one being Carolyn Merchant, founder of ecofeminism. The position of environmental historians in contemporary political debates is further discussed in: William Cronon, ‘The Uses of Environmental History’, *Environmental History Review* 17, no. 3 (1993): 1–22, <https://doi.org/10.2307/3984602>; Isenberg, ‘Historicizing Natural Environments.’

¹⁴ William Cronon, ‘The Trouble with Wilderness: Or, Getting Back to the Wrong Nature’, *Environmental History* 1, no. 1 (1 January 1996): 7, <https://doi.org/10.2307/3985059>; William Cronon, ‘The Trouble with Wilderness’, *The New York Times*, 13 August 1995, sec. Magazine, <https://www.nytimes.com/1995/08/13/magazine/the-trouble-with-wilderness.html>.

¹⁵ William Cronon, ‘The Trouble with Wilderness: A Response’, *Environmental History* 1, no. 1 (1996): 47–55, <https://doi.org/10.2307/3985063>.

¹⁶ Callicott and Nelson, *The Great New Wilderness Debate*.

¹⁷ Or worse, a poststructuralist, see: George Sessions, ‘Reinventing Nature, ...? A Response to Cronon’s Uncommon Ground’, *The Trumpeter* 13, no. 1 (2 January 1996), <https://trumpeter.athabascau.ca/index.php/trumpet/article/view/280>. Judging by Cronon’s own article discussed below, the label is probably even apt, even if he was trying very hard not to be so.

¹⁸ William Cronon, ‘A Place for Stories: Nature, History, and Narrative’, *The Journal of American History* 78, no. 4 (1992): 1350, <https://doi.org/10.2307/2079346>.

place for moral order, but it is not the prime concern here. Rather, it is Cronon's analysis of narrative itself that is instructive.

In narrativist tradition, Cronon decoded several histories about the American Great Plains into the plot lines of literary genres such as tragedy, drama and epic. Crucially, these histories both predate and follow up on the Dust Bowl, a period in the 1930s during which the region was plagued by sandstorms that seemed, indeed, to be a tragedy. Sandstorms had occurred there for ages, but the land's depletion had severely worsened them. In the Frontier Thesis, the cultivation of the Great Plains had been crucial for American growth, both economically and ideologically. Enter the Dust Bowl sandstorms, and the fiction of endless progress eroded, inciting a re-evaluation of agricultural and economic planning in the region, but also a re-evaluation of history. In that sense, the Dust Bowl predated key moments in environmentalism, such as *Silent Spring* and *Limits to Growth*.

In Cronon's view, 'the Dust Bowl had occurred because people had been telling themselves the wrong story and had tried to inscribe that story – the frontier – on a landscape incapable of supporting it.'¹⁹ However, Cronon realized the Dust Bowl as a tragedy was only one way of telling the story, and he was somewhat surprised it didn't definitively invert the Frontier Thesis. In particular, Cronon contrasted two books, both titled *Dust Bowl*, both published in 1979, and both written by 'competent authors looking at identical materials drawn from the same past', but eventually reaching 'divergent conclusions': Donald Worster (the only true environmental historian in Cronon's paper) described the event as a great tragedy, but Paul Bonnifeld's *Dust Bowl*s was about human resilience.²⁰

But what is this "story" Cronon speaks of? Throughout the article, he used a rather narrow definition, with room for determinism only:

What distinguishes stories from other forms of discourse is that they describe an action that begins, continues over a well-defined period of time, and finally draws to a definite close, with consequences that become meaningful because of their placement within the narrative. ... The moral of a story is defined by its ending: as Aristotle remarked, "the end is everywhere the chief thing."²¹

So, with Cronon's recipe environmental histories are essentially just scaled-up historical versions of Grylls' adventures (without the commercials). Just like it's unthinkable that Grylls' show would end up with the presenter drowning in lava, environmental histories need to move from A to B, by going either up or down:

Since Worster's story concerns the destruction of an entire ecosystem, it must end where the frontier story began: in a wasteland. Whereas the frontier narratives begin in a negatively

¹⁹ Cronon, 'A Place for Stories', 1359 – 1360.

²⁰ *Ibid.*, 1348.

²¹ *Ibid.*, 1368.

valued landscape and end in a positive one, Worster begins his tale in a place whose narrative value is entirely good.²²

A storied cosmology

In Cronon's eyes, gathering, arranging and assembling evidence is all geared towards creating a nicely (a)symmetrical, transformative story. According to Cronon, this makes environmental history problematic; human events can be put on a straight line, but 'things in nature usually "just happen." ... One does not automatically describe such things with narrative plots, and yet environmental histories ... all have plots,' created simply through selection and truncation.²³ As to the origin of the story itself, Cronon contemplated two answers, one which makes stories appear as sounds in the echo chamber of a civilized world, another which has them play out in our brains.

First, Cronon explained that plots may be broadly viewed as 'cultural constructions' that are 'deeply embedded in our language'. According to him, this idea can be traced to 'philosophers and post-structuralist critics' such as Hayden White and Louis Mink, who argued that we impose plots upon reality that are 'basic to our cultural beliefs', but that this reality (to a more or less degree) is itself devoid of these plots.²⁴ Cronon quoted Mink: 'the past is not an untold story.'²⁵ However, Cronon didn't further unpack the idea of a cultural construction. For example, he didn't dwell on the details of White's view of narrative as a symbolic 'model, or icon, of past structures and processes.'²⁶ Neither did he view the story as a malleable entity, as White did when urging historians in the 1960s to look at contemporary literary forms.²⁷

Rather, Cronon preferred an argument developed by phenomenologists such as Martin Heidegger and David Carr, which effectively avoids difficult ontological questions by claiming humans experience reality in an inherently storied way, regardless of the storied nature of reality itself. Cronon favoured their line of thought as it enchants history; making it neither science nor art, but a trade in printed human consciousness itself. From the simple act of walking through a door to the full-blown scale of wars, generalizing storytelling across all of humanity, he argued: 'our habit of partitioning the flow of time into "events," with their implied beginnings, middles, and ends, suggests how deeply the narrative structure inheres in our experience of the world.'²⁸ For him, this argument confirmed the immutability in time and space of the story as a unit. In fact, the story is a universal quality of the human, Cronon

²² *Ibid.*, 1364.

²³ Cronon, 'A Place for Stories', 1368. Note that this is just another version of the 'the great temporal and ontological divide between nature and society', as identified by Bonneuil and Fressoz.

²⁴ 1368

²⁵ Louis Mink, 'Narrative as a Cognitive Instrument', 148 **cited in** Cronon, 'A Place for Stories', 1368.

²⁶ Hayden V. White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe*, Fortieth-anniversary edition (Baltimore, Maryland: Johns Hopkins University Press, 2014), 40.

²⁷ *Ibid.*; Hayden V. White, 'The Burden of History', *History and Theory* 5, no. 2 (1966): 111-34, <https://doi.org/10.2307/2504510>.

²⁸ Cronon, 'A Place for Stories', 1368; Noël Carroll, review of *Review of Time, Narrative, and History*, by David Carr, *History and Theory* 27, no. 3 (1988): 297-306, <https://doi.org/10.2307/2504924>.

cited a novelist: 'Only nature knows neither memory nor history. But man ... is the storytelling animal.'²⁹

Though admitting a preference for the second argument, Cronon eventually did not ascribe to either school of thought, which is understandable, as neither rescued his desired objective basis; both only explain the origins of potential subjectivity. Not willing to end it there, he called upon his colleagues to do like him and tell 'not just stories about nature, but stories about stories about nature.' Reflection, he hoped, will at least point out how stories which pay 'attention to nature and the place of people within it can better be told.'³⁰

Cronon did realize history cannot be pulled out of thin air. For example, he admitted that one might construct 'a simple chronological listing of events as they occurred in sequence.'³¹ Yet isolated chronology, he continued, is 'peculiar' as there is no connection between events. To Cronon, chronology is at best a reflection of the story implanted in an author's mind, helpful in deriving the coveted plot, but without any external logic. Next, there is pesky science. Cronon granted that 'stories must make ecological sense. ... the biological and geological processes of the earth set fundamental limits to what constitutes a plausible narrative.'³² Limits, not opportunities; science is only vaguely informative and perhaps a rhetorical device at best. At worst it's only a constraint to a historian's work. In either case, sciences are not a source for alternatively storied realities.³³ Finally, Cronon admitted that the historian, being human after all, lives in academic, social and political communities which are ground for biases and delusions, which find their way into their stories. Again, there is no notion that these communities might provide wholly different stories altogether.

We might well say that "the story is everywhere the chief thing" in Cronon's view, not just when it comes to the historian's craft, but the natural and human world as a whole. More

²⁹ Graham Swift, *Waterland* cited in Cronon, 'A Place for Stories', 1345. Of course, when man couldn't yet stand on two feet, he was a very different type of storyteller (and listener!). For a history of the "prehistorical" capabilities of human storytelling (and 'cultural niche construction' in general), which views the Neolithic not merely as technological revolution, but as a cultural one, see: Trevor Watkins, 'Locked in the Neolithic between Evolution and History', in *Time and History in Prehistory*, ed. Stella G. Souvatzi, Adnan Baysal, and Emma L. Baysal (Abingdon, Oxon ; New York, NY: Routledge, 2018), 97–108.

³⁰ *Ibid.*, 1375 - 1375.

³¹ *Ibid.*, 1351.

³² *Ibid.*, 1372 - 1373.

³³ Although results from natural and earth sciences are at the very least constructive to virtually any environmental history, and in many case take a prime spot in which it is used in both technical and rhetorical fashion, the issue of environmental history and "science" is difficult. On the fringe of ecology and history, environmental historians were in a better position than anyone to see through layers of supposed rationality and objectivity. As we'll see in the following chapters, a healthy dose of scepticism thus exists in the work of Cronon and Crosby, and, as we'll not see in this thesis, a somewhat bigger dose in Carolyn Merchant's work. For that, see: Sessions, 'Reinventing nature'; Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: Harper & Row, 1989).

than just a symbolic construction, the story goes to the very core of human observation, communication *and* the reality of the human world, as opposed to the natural one.³⁴

A place made of stories

It is easy to side with Cronon when he argued that Nature, in its opposition to Man, is ‘a place for stories.’ Whether told by a flashy adventurer on a volcano, a ‘very public hermit’ in the woods,³⁵ or historians mentally overlooking the dusty American plains, nature is undeniably a place for tremendous adventure and myth, even if it takes a little pruning on the *Discovery Channel* cutting room floor. Yet on a constructivist note, I would add that nature becomes a place *made* of stories when each depiction piles on top of one another. Consequently, it becomes difficult, ridiculous even, to see narrated Nature not in terms of the transformative story. Take out the transformation, and we have a well-rested and well-fed Grylls find his way back to civilization, or Thoreau retrieve to isolation when already a complete person. To write environmental history attentive to cyclicities and randomness would be something similar, a human-nature in a similar state on both ends of the narrative, which is unsensible in Cronon’s dogmatic eyes.

And yet, this is precisely the type of history he would try to write, as we’ll see in in Chapter 5. Perhaps more than any environmental historian of his time, Cronon actively sought ways to discuss human-nature relations not along the familiar linear line, well before he published the article here discussed. Cronon’s history, and a few more we’ll encounter, do not have the familiar symmetric structure of beginnings, middles and ends. Cronon may have been innovative in practice, but when withdrawing to a conceptual level he was deeply conservative.

Cronon need not be representative for the field at large, but clearly the legacy of a dualistic nature-culture perception goes deep.³⁶ Nature becomes made of stories, but history becomes made of stories as well, even if the day-to-day practice of writing history differs. This is a similar misfit between practice and theory as the one we encountered in the previous chapter, though this time history’s province is even less convoluted, as only conventional story dwells there. Provincializing Cronon’s view is relatively straightforward: accept that alternative types of narratives exist, and the storied cosmology collapses like a house of cards. Then, there is clearly no longer a need to ascribe to either a constructivist or phenomenological school of thought when it comes to stories’ origins, and it becomes easier to see how inspiration is drawn from elsewhere.

By consequence, the idea of the temporality of a history changes altogether when narrativity and temporality are unbound, or upon provincializing more generally. One *could* view a history’s temporality as a rather meaningless emergent property of routine modes of writing. Alternatively, one could consider the temporality an honest attempt at realistic

³⁴ Cronon wasn’t alone in tying temporality to narrativity, he seems to closely follow (among others) Paul Ricoeur’s *Time and Narrative*. See: Cronon, ‘A Place for Stories’, 1368. For a shortened version of Ricoeur’s argument, see: Paul Ricoeur, ‘Narrative Time’, *Critical Inquiry* 7, no. 1 (1980): 169–90.

³⁵ Maynard, ‘Emerson’s “Wyman Lot”’, 76.

³⁶ However, Cronon was by no means a conservative environmental historian.

representation of (perception of) the past. Or one could view it as merely an essential property for effective human communication. These various meanings pose a difficult matter in Cronon's view, as well in dualistic nature-culture views in general, as they are not easily disentangled as long as narrative determines every step of the research process. As we'll see in the subsequent chapters, environmental histories actively confronted the ties between temporality and history, producing more diverse types of stories, finally disentangling humans from our mythical nature.

Chapter 4. Bursting the limits of history

Fernand Braudel, Alfred Crosby and the making of bigger pasts

Er was niets woests of ledigs voor het begin. Geen duistere afgronden, geen geest die over de wateren ging; ... De hemel was blauw en er gebeurde helemaal niets.

Mathijs Deen, *De Wadden: Een geschiedenis*, 2013.¹

Introduction

When does a history begin? Should it have a beginning at all? The inaugural setting puts the reader into the groove of an unfolding argument, but how to start is a question rarely asked aloud when writing and reflecting upon the narrated pasts.² A rare exception is John Lewis Gaddis' seminal introduction and reflection on the craft and science of writing history, in which he explained how finding the moment to begin a history is, usually, the result of a tacit estimate of relevance versus context, determined versus contingent. Taking the attack upon Pearl Harbour as an example, he pointed out 'the launching of the planes from the carriers ... would make no sense' as a starting point, nor would the immediate military and economic context. One would need to go back further, well before the start of World War II, though the moment 'when the first Japanese island rose up, in great billowing clouds of steam and smoke' would probably be too early.³

And yet, Alfred Crosby confidently started the first chapter of his award-winning environmental history *Ecological Imperialism* (1986) as follows: 'It is necessary to begin at the beginning, ... and that means not in 1492 or 1788 but about 200 million years ago' with a period of seismic activity forming the current continents, presumably in billowing clouds of steam and all.⁴

As this chapter shows, this early beginning didn't emerge out of thin air, but was the result of earlier attempts, some by Crosby himself, to push the limits of history into a terrain incomprehensibly vast, flat and hauntingly devoid of humans, or into a past well in sight of humans, but with events that had been so big, all had previously overlooked them. Of course, the such pasts had been around for some time, but were textured not like the history we know.

¹ Mathijs Deen, *De Wadden: Een Geschiedenis* (Amsterdam: Uitgeverij Thomas Rap, 2013), 15.

² This is arguably less an issue in non-linearly storied histories, where there would likely be multiple grooves to be put in, not all at the beginning.

³ John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (Oxford: Oxford university press, 2002), 95 – 96.

⁴ Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, Studies in Environment and History (Cambridge: Cambridge University Press, 1986), 9.

Focussing on Crosby's work, this chapter sketches how, through the combined imagination and tools of historians and earth scientists, big and deep pasts became the terrain of familiar historical imagination.

Braudel's tripartite model

It is clearly not necessary to begin the prehistory to Crosby's books 200 million years ago, but to begin this chapter only in the 1970s would be a tad late. An interesting point of departure is just a few decades earlier, with Fernand Braudel and his *Annalistes* colleagues. Braudel, who is almost without exception included into intellectual histories to the field of environmental history, is remarkable not only because he would push historical boundaries, but also because he did so in a transparently well-motivated, almost schematic fashion.⁵ Arguably, Braudel entered a historical landscape which had become mostly detached from the natural world, with Hegel's early nineteenth century dogma 'nature has no history' still in place.⁶ It should be noted though that his colleagues at the *Annales* had already gone quite a way in 'the dethroning of kings', writing socio-economic histories and even, tentatively, histories in which landscape and climate figured as historical actors.⁷

For Braudel, this condensed into a holistic structural view of history, which he presented first in *The Mediterranean and the Mediterranean World in the Age of Philip II*, originally published in French in 1949.⁸ Braudel's *magnum opus* focussed on the Mediterranean world in the second half of the sixteenth century, but traced its history into a stratigraphy of three distinct layers, reflected in the tome's structure itself. First, there is the *longue durée*, 'a history whose passage is almost imperceptible, that of man in his relationship to the environment, a history in which all change is slow, a history of constant repetition, ever recurring cycles.'⁹ The laws that govern this layer are those of geology and geography, the changes of the *longue durée* are the raising of mountains and filling of seas. Next there is a faster layer, one 'with slow but perceptible history ... one could call it *social*

⁵ Isenberg, 'Historicizing Natural', Fabien Locher, Grégory Quenet, and William Bishop, 'Environmental History: The Origins, Stakes, and Perspectives of a New Site for Research', *Revue d'histoire moderne contemporaine* 564, no. 4 (n.d.): 7–38; Richard Grove and Vinita Damodaran, 'Imperialism, Intellectual Networks, and Environmental Change; Unearthing the Origins and Evolution of Global Environmental History', in *Nature's End*, ed. Sverker Sörlin and Paul Warde (London: Palgrave Macmillan UK, 2009), 23–49, https://doi.org/10.1057/9780230245099_2.; Dale Tomich, 'The Order of Historical Time: The Longue Durée and Micro History', *Almanack*, no. 2 (December 2011): 38–52, <https://doi.org/10.1590/2236-463320110204..>

⁶ Tamm and Boldizár Simon, 'More-Than-Human History', 205.

⁷ Geoff Eley, *A Crooked Line: From Cultural History to the History of Society* (Ann Arbor, Mich: Univ. of Michigan Press, 2008), 38.

⁸ Of course, 'view of history' can be interpreted as a statement about the realism of events in the past, as well as an opinion about writing or perceiving history. I will touch upon such questions about historical ontology and epistemology in later chapters, as I did in the previous chapter. However, I did not study these questions for Braudel.

⁹ Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II. Vol. 1*, trans. Siân Reynolds, vol. 1 (Berkeley, Calif.: Harper & Row, 1972), 20.

history, the history of groups and groupings.”¹⁰ Finally, the third layer is one of “traditional history – history ... on the scale not of man, but of individual men.”¹¹ Braudel admitted that this fastest layer is the most exciting, it is ‘one of burning passions’, most sensitive to disturbance, which might make it alluring, but treacherous. Only by charting its slower foundational pasts, ‘exorcising’ traditional history’s ‘spells and enchantments,’¹² can we be sure to find the true meaning of events, away from the shallow fashions of the day.

In current critique from the ranks of post-anthropocentric thinkers, Braudel’s *Mediterranean* is often depicted as exemplary for the contemporary rift between nature and culture, promoting human agency by emphasizing the slow pace of natural change.¹³ Some authors even point to Braudel’s blindness to the (potential) rapidity of climate change and human agency therein.¹⁴ This view overlooks the pluralism of Braudel’s world, with multiple temporalities running at different paces locally in unique ways, ruffling nature’s previously universal flat surface. Braudel’s quite sensible assertion, likely accurate for most cases, is that the faster the changes in human history, the less relevant the slower layers are, which moves nature into the background: ‘seasonal determinism that so clearly affects rural life has continually been thwarted by the will of man, particularly in the towns.’¹⁵ In contrast, in slow regions the changes of local socio-economic time are almost in synchrony with the *longue durée* itself. ‘The mountains are as rule a world apart from civilization, which are an urban and lowland achievement. Their history is to have none, to remain always on the fringe of the great waves of civilization ... To these hilltop worlds, out of touch with the towns, even Rome itself, in all its years of power, can have meant very little.’¹⁶

Much of the work of Braudel and his colleagues was dedicated to charting the middle ground of this temporal spectrum with newly developed historical techniques that we would now describe as interdisciplinary. This especially included agricultural histories, and histories of mentalities in the light of environmental change, such as changing climates.¹⁷

Through these tools, Braudel and others became more attentive to the layers that make up reality, not taking for granted that it had been only humans who rationally shaped their worlds by brute force and hard thinking, but also not by necessarily fleeing into the large scale. Braudel’s structuralist view of history departs from an awareness that behind mundane events there might be something bigger on a larger scale, possibly that of the deep natural

¹⁰ *Ibid.*

¹¹ *Ibid.*, 21.

¹² *Ibid.*

¹³ Sverker Sörlin, ‘Environmental Times: Historical and Scientific Temporalities from Annales to Anthropocene, ca. 1920-2020’, in *Times of History, Times of Nature: Temporalization and the Limits of Modern Knowledge*, ed. Anders Ekström and Staffan Bergwik, Time and the World : Interdisciplinary Studies in Cultural Transformations, volume 5 (New York: Berghahn, 2022); Bergwik and Ekström, *Times of History, Times of Nature*, 12 – 29.

¹⁴ Chakrabarty, ‘Four theses’. Note that this critique echoes contemporary accusations of environmental determinism, see: Peter Burke, *The French Historical Revolution: The Annales School, 1929-89*, Key Contemporary Thinkers (Cambridge: Polity press, 1990), 40.

¹⁵ Braudel, *The Mediterranean*, p. 266.

¹⁶ *Ibid.*, p. 34.

¹⁷ For example: Emmanuel Le Roy Ladurie, *Times of Feast, Times of Famine: A History of Climate since the Year 1000* (New York: Farrar, Straus and Giroux, 1988).

history. The fact that this deep history turned out flat, isn't particular to Braudel, but for perceptions of that past more generally.

Naturalizing, historicizing

There are at least two ways of telling how deep nature came to be seen as flat in public imagination in Braudel's time. Both take the long nineteenth century as a pivotal chapter, – some have even flirted with calling it 'revolutionary'¹⁸ – but where there is a rupture in the first explanation, there is only a mirror in the latter. In the first version, historians in this period soon gave up on juxtaposing humanity's history to the rapidly deepening of life on earth as geologists unearthed increasingly older pasts. Although the human present turned out to be evolutionarily connected to monkeys and dinosaurs, that same modern present could accelerate faster than earth's history could deepen, keeping the deep past and present safely separate. Bonneuil and Fressoz present it roughly as such when explaining how 'the great temporal and ontological divide between nature and society' has opened up, which, according to them, is still reflected in distinct disciplinary mindsets.¹⁹

In *Bursting the Limits of Time* (2005), historian of geology Martin Rudwick offers a, second, wholly different version of the same period. His claim is that, rather than rupture apart, deep human and natural history were effectively created in each other images, with the advent of what we've come to call geology tightly coupled to contemporary historical consciousness itself: 'When the evidence for an immensely long geohistory became overwhelming, it made sense to try to construct a history for the vast tracts of prehuman time, and to *link* it on to the history recorded in more traditional and human ways.'²⁰ Besides adding neglected colonial undercurrents, Pratik Chakrabarti has recently pointed out how Rudwick's concept of 'historization' was, in fact, still mostly geological, and didn't have much to say about human history. Effectively turning Rudwick's narrative upside down, Chakrabarti has studied the 'naturalization of history,' now including the way in which existing historical imagination of the deep past, antiquity and myths, were rethought in terms of their new geological scale.²¹

I lean toward the second explanation. Viewing the historization of nature and naturalization of history as an interwoven whole is what much of this thesis is about. In this case, it explains how there was good reason that Braudel's nature was flat. When he wrote his work, the continents were still pinned to their place, and although cutting up time is arguably

¹⁸ Martin J. S. Rudwick, *Bursting the Limits of Time: The Reconstruction of Geohistory in the Age of Revolution* (Chicago, IL: University of Chicago Press, 2007), <https://press.uchicago.edu/ucp/books/book/chicago/B/bo3533976.html>, 1; Stephen Jay Gould, *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time*, The Jerusalem-Harvard Lectures (Cambridge, Mass: Harvard University Press, 1987).

¹⁹ Bonneuil and Fressoz, *The Shock of the Anthropocene*, 35.

²⁰ Rudwick, *Bursting the Limits of Time*, 7.

²¹ Pratik Chakrabarti, *Inscriptions of Nature: Geology and the Naturalization of Antiquity* (Baltimore, Maryland: Johns Hopkins university press, 2020). A similar argument is developed, albeit from a very different angle, in: Noah Heringman, *Romantic Science: The Literary Forms of Natural History* (State University of New York Press, 2012).

geology's ultimate goal, in the 1940s, these cuts were by no means clean. In general, slow changes between epochs were preferred over quick ones, there were few revolutions, no radical breaks as species came and go, and climates heated and cooled. This makes sense, as in human history there was little to suggest any global events of supreme magnitude. Rudwick has pointed out how well into the 1960s most geologists dismissed 'any suggestion that there might have been events of an intensity beyond any observed at the present day or recorded in human history.'²² Drawing a comparison to an early nineteenth century debate over 'absolute uniformity' of the earth across time, with Charles Lyell as one of the main contenders, Rudwick describes how "catastrophists" were dismissed as fanciful charlatans. In 1961, C.H. Elton, a prominent palaeontologist, still proclaimed that 'catastrophes are the mainstays of people who have very little knowledge of the natural world; for them the invocation of a catastrophe is an easy way to explain great events.'²³ In other words, the best explanations for change in nature was along gradual lines of stability. Amongst ecologists, mostly concerned with contemporary change, the situation wasn't much different. Even Arthur Tansley, the founding father of the dynamic ecosystem concept, saw catastrophes, whether the local elephant stampede or a massive landslide, as a peculiarity. Like other ecologists, he kept his eyes on the gradual, rather than the disruptive.²⁴

So, without the reversed *deus ex machina* as a discreet deep starting point, the collapse of history into the recent human past makes sense, and in the rare case where historians sought an early start, such as Braudel, it was in a somewhat generic form of geographic determinism. After all, for a past event to give a true relevance for a history, it must take a place on a grand scale which leaves traces which aren't eroded or diffused over time, a particular problem on local scales, on which such events were rare.

Finally, from the post-war decades onwards, this deep past became rapidly punctuated with events, migrations, tsunamis, landslides and, of course, asteroid impacts which transcended anything natural in the human past.²⁵ A great deal of interdisciplinary cooperation was behind this (and some oil drilling, it should be said), accompanied by a great proliferation of neologisms; scientists such as "paleobiologists" and "biogeographers"

²² M. J. S. Rudwick, *Earth's Deep History: How It Was Discovered and Why It Matters* (Chicago ; London: The University of Chicago Press, 2014), 267.

²³ C.H. Elton **cited in** James Lawrence Powell, *Night Comes to the Cretaceous: Dinosaur Extinction and the Transformation of Modern Geology* (New York: W.H. Freeman, 1998), 26.

²⁴ Paul Warde, Libby Robin, and Sverker Sörlin, *The Environment: A History of the Idea* (Baltimore: Johns Hopkins University Press, 2018), 80; A. G. Tansley, 'The Use and Abuse of Vegetational Concepts and Terms', *Ecology* 16, no. 3 (1935): 286, <https://doi.org/10.2307/1930070>; Warde et al. 73 – 95. Warde et al. overdo Tansley's rejection of catastrophe. Ecologists were strongly concerned with gradual succession (until the 1960s), but without necessarily disavowing the significance of catastrophic change itself.

²⁵ Stein Bondevik, 'Tsunami from the Storegga Landslide', in *Complexity in Tsunamis, Volcanoes, and Their Hazards*, ed. Robert I. Tilling (New York, NY: Springer US, 2022), 153–85, https://doi.org/10.1007/978-1-0716-1705-2_644; Daniel Garcia-Castellanos et al., 'The Zanclean Megaflood of the Mediterranean – Searching for Independent Evidence', *Earth-Science Reviews* 201 (February 2020): 103061, <https://doi.org/10.1016/j.earscirev.2019.103061>; Powell, 'Night Comes to the Cretaceous', 266 – 271.

sketched a deep past that was not just dynamic on a global scale, but also locally.²⁶ For example, it was discovered that the Mediterranean had been isolated from the Atlantic until about 5 million years ago, when it was reconnected through the ‘Zanclean flood’, which explains particular vegetation patterns in isolated places. It’s not hard to see how here too human historical imagination was printed into deep time; in recent years the Zanclean flood has been re-marketed as a “megaflood”, which ended what has become known as a salinity “crisis”, too bad there wasn’t yet a government, or a messiah, to offer salvation in this crisis.²⁷

So by the 1980s, historians had a much richer deep historical landscape to tap into, one filled with the moralistic, transformative stuff familiar in human history. For Braudel, the Mediterranean Sea, the mountains surrounding it and the people living there had simply been there for ages, and the fact that he had tried to envision them living there had quite the innovation already. In contrast, in a recent environmental history, the author started comfortably in deep history, including the pushing up of mountains and of course the Zanclean megaflood. Eventually, humans enter into the picture, and start doing what they do best, restructuring and exploiting the landscapes in ways that severally impacted the course of history.²⁸ However, not only did humans have an impact on the very deep past, but also closer to the present on scales bigger than ever seen before, as shown by a number of environmental historians, of whom Alfred Crosby’s work is probably the most evocative.

Alfred Crosby: From evolution, to revolution, and back

Crosby’s story in *Ecological Imperialism* may have begun 200 million years ago, but this is not where his own story started. This might be said to have started with Act 1, Scene 1 of his dissertation on the trade between Russia and America during Napoleon’s wars, which, despite being structured as a play, doesn’t seem to have done much in popularising such socio-economic history.²⁹ Soon, Crosby took to an even grander scale. His innovative 1972 *The Columbian Exchange* showed that thousands of years of evolution had created conditions for nothing less than a revolution. Through this book, he helped establish a genre of deep histories that his later book would fit into. So whilst the first book was explorative, even chaotic at times, the second had a well-developed strategy.

Though Crosby’s approach was innovative, the author himself wasn’t keen on methodological reflection; there’s no independent model as in Braudel’s work. To better understand the temporal structure employed in his books, we will therefore have to compare the two books, and fit them in their scientific and cultural context.

²⁶ Powell, ‘Night Comes to the Cretaceous’; David Sepkoski, *Rereading the Fossil Record: The Growth of Paleobiology as an Evolutionary Discipline* (Chicago, IL: University of Chicago Press, 2015), <https://press.uchicago.edu/ucp/books/book/chicago/R/bo12778556.html>.

²⁷ Garcia-Castellanos et al., ‘The Zanclean Megaflood of the Mediterranean – Searching for Independent Evidence’.

²⁸ J. Donald Hughes, *The Mediterranean: An Environmental History*, Nature and Human Societies (Santa Barbara, Calif: ABC-CLIO, 2005).

²⁹ Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Contributions in American Studies, No. 2 (Westport, Conn: Greenwood Pub. Co, 1972).

The Columbian Exchange: From evolution, to revolution

Although the argument of the 1972 book is well-known today, it took a while to take off. Crosby had a hard time finding a publisher for the book, its few reviewers struggled to put a disciplinary label on it and none anticipated the effect it would have.³⁰ After this rough start, the book's thesis would quickly gain popularity and its title has long outgrown it; Crosby's term 'Columbian Exchange' is still used today to refer to the perils of globalisation, for example in explaining the current pandemic.³¹ The familiar argument runs as follows: thousands of years (Crosby couldn't yet tell how many precisely) of isolated evolution on both sides of the Atlantic had created conditions so radically different, with species whose immune systems were incommensurable and economic systems completely incompatible, that the situation had become highly unstable. So when voyaging Spaniards set off from Europe, they would be the spark that set off 'the greatest biological revolution in the Americas since the end of the Pleistocene era.'³²

Unknowingly, Indigenous Americans and Europeans began trading in diseases. Measles and smallpox were bad enough in Europe, to unaccustomed New World immune systems they were disastrous, sweeping out up to ninety percent of the indigenous populations. Less violently, the same was true for the unconscious exchanges of plants and animals, much to the benefit of the European colonizers. The idea behind this 'ecological homogenization' wasn't entirely new, but Crosby's crucial argument was that it was key to understanding human histories in both regions; the colonization of the Old World can hardly be considered a technological feat. Although guns, boats and heroic *conquistadors* may have helped, other protagonists of the conquest are horses, pigs and smallpox. The colonists nimbly followed, rapidly growing in numbers as they gnawed their way through the lushes of the new land, driven by little more than hunger: 'man is a biological entity before he is a Roman Catholic or a capitalist or anything else.'³³

But to view *The Columbian Exchange* as a story with only biology to direct its actors would be too simple. Throughout the book, Crosby juggled with human and natural agency, alternately viewing the *conquistador* as background and foreground, subject and object.

³⁰ Jonathan D. Sauer and Alfred W. Crosby, 'Review of *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Alfred W. Crosby, Jr.', *Economic Botany* 27, no. 3 (1973): 348–49.; Donald B. Cooper, 'Review of *The Columbian Exchange: Biological and Cultural Consequences of 1492.*, Alfred W. Crosby, Jr.', *The Hispanic American Historical Review* 53, no. 3 (1973): 498–500, <https://doi.org/10.2307/2512980>; G. S. Dunbar and Alfred W. Crosby, 'Review of *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Alfred W. Crosby, Jr.', *The William and Mary Quarterly* 30, no. 3 (1973): 542–43, <https://doi.org/10.2307/1918510>.

³¹ J.R. McNeill in Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, 30th anniversary ed., 1. publ, Contributions in American Studies 2 (Westport, Conn. London: Praeger, 2003), 5; Rajat Ghai, 'COVID-19 to Black Lives Matter: How the Columbian Exchange Still Shapes Lives', *DownToEarth* (blog), 8 September 2020, <https://www.downtoearth.org.in/interviews/environment/covid-19-to-black-lives-matter-how-the-columbian-exchange-still-shapes-lives-73262>.

³² Crosby, *The Columbian exchange*, 66.

³³ *Ibid.*, xiii.

For a section on the conquest of the Caribbean specifically, Crosby remarked: ‘The three animals which played the leading roles in that conquest were the *hidalgo* (the Spanish nobleman), the pig and the horse. The *hidalgo* led the way.’³⁴ Though keen to point towards the dreadful ecological effects of the Columbian Exchange, Crosby avoided shifting responsibility to one type of actor, past or present. In the ominous final chapter ‘The Columbian exchange continues’, he lamented about the ‘destruction of ecological stability, ... a crime against posterity’ whilst maintaining that the ‘enormous increase in food production and, thereby, in human population’ was a ‘positive result’ of the exchange.³⁵ Whereas Braudel associated distinct actors with distinct layers of history – a mountain would be an actor on the *longue durée* scale but background for traditional history – all actors seem to mingle in Crosby’s interdisciplinary narrative, which made the question of agency difficult to the author, and his answer was not quite consistent.

Similarly, the temporality of *The Columbian Exchange* can be partially related to Braudel’s tripartite model at certain moments, but breaks with it at others. Crosby retold his main plotline on the ecological invasion of new species in several essays – whether it is about diseases, horses or humans – with only the speed varying from place to place, depending on local environment: ‘The history of the llanos follows the same course as that of the plains of Mexico, only a much slower pace’³⁶, a structural determinism reminiscent of Braudel. We could even dissect Crosby’s history into two separate parts with corresponding temporal layers. There is an introductory chapter with a *longue durée*-like structure, whilst subsequent chapters are positioned mostly in the second layer of ‘social history’. What Braudel called ‘traditional history’ is almost fully disregarded; no individual’s life seems to matter much within Crosby’s story.

Yet the entanglement of socio-economic history with ecology, geology and evolution goes further, up to the point when a Braudelian horizontal segregation of layers breaks down. To this end, ecology, specifically the ecology of invasions, is crucial; mediating the mixing of an evolutionary history and natural history, as well as the natural history and economic history of the region.³⁷ Firstly, Crosby’s account of ‘the greatest biological revolution in the Americas since the end of the Pleistocene era’ marked a rapid change of “slow” earthly timescales belonging to the *longue durée* itself.³⁸ The combined effort of geological, evolutionary and ecological factors gradually put the New and Old World’s in different grooves. So far so good, but this correlation continued throughout the Columbian Exchange,

³⁴ *Ibid.*, 77.

³⁵ *Ibid.*, 211.

³⁶ *Ibid.*, 89.

³⁷ In the wake of the disastrous chestnut blight in North America or the invasion of the North American muskrat in Europe and Asia, ecologists had become well aware of the possible rapidity of ecological change, to contrast previous ecologies more occupied with static circumstances. Initially however, invasion ecology chiefly referred to directly human incited ecological invasion. From this perspective, the inherent changes in environments, large or small, and the changes beyond human rule, were largely out of sight. Anthony Ricciardi and Hugh J. MacIsaac, ‘The Book That Began Invasion Ecology’, *Nature* 452, no. 7183 (March 2008): 34–34, <https://doi.org/10.1038/452034a>.

³⁸ *Ibid.*, 66.

rapidly accelerating a temporal layer that should always move at a steady pace in Braudel's eyes. Secondly, disguised as ecology, evolutionary changes could march directly into human histories. This is most apparent in a lengthy discussion of Malthusian demographic laws, which Crosby juxtaposed with laws from invasion ecology. Here Crosby described the simple model by the Enlightenment demographer Thomas Malthus, in which population growth mathematically follows a steep geometric curve, until the inevitable catastrophe happens. Guided only by a growth factor depending on food production, the simple model had long been outdated. Consciously treading on shaky grounds, Crosby attempted a little revival of Malthusianism, arguing against technological and hygienic explanations of human population growth: 'It is certainly true that world population growth began to accelerate generations before the engine ... replaced animal and muscle in transportation.'³⁹ Crosby explained how the new lushes that the colonising apes could tap into are helpful to explain their rapid population growth: 'when hunger is assuaged – even by the products of alien seeds – babies are conceived, are born, thrive and have their laps full of grandchildren.'⁴⁰

Crucially, Malthus' model of population growth happens to be transferable to non-human species, and can be termed 'the first law of population dynamics' in ecology.⁴¹ Following the 'awesome initial increase' of cows, Crosby concluded that 'when the hoarded riches of the grasslands were gone, the increase of the herds halted or proceeded at a pace no more arithmetical than geometrical.'⁴² A statement which could just as well be about herds of humans as it is about cows.

In conclusion, Crosby's own statement that he, as historian, 'must lope where even scientists fear to tread', is true. But he also loped beyond historical boundaries, disconnecting himself from regular history, and from a Braudelian conceptual framework by developing not just a new thesis about human-natural history, but a different *kind* of thesis: an event on a scale previously unseen. His work was therefore necessarily explorative, as is easy to see as he

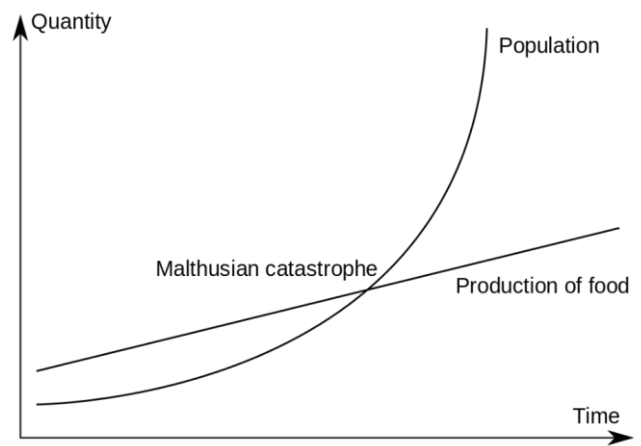


Fig 4.1: A simple depiction of a Malthusian catastrophe.

The population grows exponentially (=geometrically), whilst food production follows a linear curve, such that it can only end in disaster. Without food production as a variable parameter, the model can apply as accurately to non-human populations. In almost all cases this is highly inaccurate, and only works metaphorically. The Columbian Exchange was an exceptionally large scale event in which it did, for a time, work fairly accurately.

³⁹ *Ibid.*, 167.

⁴⁰ *Ibid.*, 169.

⁴¹ Peter Turchin, 'Does Population Ecology Have General Laws?', *Oikos* 94, no. 1 (1 July 2001): 17–26, <https://doi.org/10.1034/j.1600-0706.2001.11310.x>.

⁴² Crosby, *The Columbian Exchange*, p. 113.

struggled with agency and used very little specific temporal terminology. As a global event starting in 1492, and continuing until this day, the best epoch to fit the *Columbian Exchange* into is one of globalization, a word that was not yet in swing in the 1970s.⁴³ Moreover, his thesis was also Eurocentric and anthropocentric. Reading Crosby, the ecological consequences of Columbus' voyages are limited to whatever is in sight of European colonizers, with Indigenous Americans largely invisible.

Ecological imperialism: From revolution to revolution

Fourteen years after Crosby had isolated the Columbian Exchange out of explorative scientific data, primary sources and good historical riddance, the event now fitted within a deeper ecological history. Moreover, what had been a novel type of story, could now fit within a growing genre Crosby had himself helped to develop, as *Ecological Imperialism* (1986) successfully did. This book popularized and generalized the *Columbian Exchange* thesis, quickly winning many prizes and, being less Eurocentric, provided criticism on capitalism's impact upon the environment.

With the Columbian Exchange well familiar, the book's thesis is quite straightforward. Starting 200 million years ago with the formation of the modern continents, the book briefly sketches a long coupled evolutionary and geographical history of life on earth, with the making and breaking of isolation in regions supporting the creation and disappearance of genetic niches. Crosby then continues to point out how ecological communities have become more connected ever since humans put more advanced boats in oceans, and crossed previously impenetrable frontiers to create large coherent communities with massive trade networks for goods, flora, fauna and diseases.

The book's core explains how this calm process has been thrown off course by Europeans and their technologies, particularly the boat, as well as their "urge" for exploration. Crosby spends most of the book describing the 'Europeanization' of what would become 'Neo-Europes'; regions where European colonization was particularly successful before 1900, such as the Old World, Oceania and islands in the Atlantic. Crosby states that Neo-Europes needed to comply with only two conditions: First, they had to be geographically and climatologically similar to Europe, and second, a long period of isolation was required. Crosby explains how these two conditions are sufficient to explain why the Europeans struggled to conquer large parts of Africa and Asia until the late nineteenth and twentieth centuries.

Like any writer of a macrohistory, Crosby faced the challenge of writing attractively and lively about complex and highly contextual processes, not losing himself in a morass of contingencies and relativism. This is not only important because the book was supposed to

⁴³ I'm sure there are splendid histories of the term, but here's a Google NGram that does the trick (spoiler: it's time for a new lobby group for the term): https://books.google.com/ngrams/graph?content=globalization&year_start=1900&year_end=2008&corpus=en-2009&smoothing=0

be a popularization, but also because Crosby again tried to integrate a warning of the consequences of globalisation into what was still an academic work. If displaying humanity's agency on such timescales is familiar now in the Anthropocene, his message sounded 'a forever timely warning to humanity itself' according to one reviewer.⁴⁴

The most significant narrative strategy can be traced in the book's structure itself, which contrasted earlier (failed) ecological exchanges with the European ones. Beginning early allowed Crosby to put the story in a deep dinosaur ridden past, but, eager to point towards the technical causes of later ecological homogenization, this beginning mostly served as a rhetorical background, and Crosby quickly moved towards a somewhat more civilized world. Never shying some drama, Crosby wrote a vivid adventure story about the unsuccessful 'colonisation' of the New World by Vikings, in order to point out the technological requirements for the later European ecological imperialism. He next moved on to the recurrent pattern of European victory over the Neo-Europes, which ends approximately in 1900. By starting early on, each subsequent recurrence of the same event is nested within a larger plot and juxtaposed to similar plots. So rather than explain the one single event, as he did in the first book, Crosby's argumentation here relied on an countless comparisons.

These comparisons were across vast spatio-temporal scales, and dealing with the subsequent non-synchronicities, Crosby frequently had to jump across timelines of human and natural development, aided by a sparse use of universal terminology. Most prominent is the use of a relativized concept of the Neolithic Revolution. When the term was coined in 1936, the prehistoric transition from nomadic to agricultural societies was held to have originated in the Levant. It was developed in a social context beaming with the 'dialectics of progression', putting the Neolithic Revolution on a materialistic line of progression with the "Urban" and "Industrial revolution." How it spread to other regions, or if it reoccurred locally, were still unanswered questions, though by the time Crosby wrote his second book, it was clear that the Neolithic Revolution never quite reached the New World, nor developed independently in any way comparable to the Old World.⁴⁵ Crosby tentatively combined this materialism and spatiotemporal vagueness to reach localized version in which the unfolding 'American Neolithic Revolution' signalled that the continent was on an earlier point of the same trajectory than the Old World. Crosby's use of such universal terminology is of course typical for any macrohistorian – it has been recognized as one of the "tools" used by eighteenth century Universal Historians⁴⁶ – and gives his history a shaky materialistic taste, ignoring cultural contexts in his case.⁴⁷ But, to dissuade the use of such terminology would likely have made the book virtually unreadable.

⁴⁴ Calvin Martin, review of *Review of Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, by Alfred W. Crosby, *Isis* 78, no. 1 (1987): 105–6.

⁴⁵ Maxime N. Brami, 'The Invention of Prehistory and the Rediscovery of Europe: Exploring the Intellectual Roots of Gordon Childe's "Neolithic Revolution" (1936)', *Journal of World Prehistory* 32, no. 4 (1 December 2019): 311–51, <https://doi.org/10.1007/s10963-019-09135-y>.

⁴⁶ Jordheim, 'Making Universal Time: Tools of Synchronization'.

⁴⁷ William Cronon, review of *Review of Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, by Alfred W. Crosby, *The Journal of American History* 74, no. 1 (1987): 150–51, <https://doi.org/10.2307/1908524>.

Although jumping across timelines, Crosby’s main point of reference was the deepest time he could find, all the way back to the story’s tectonically driven beginning. A particularly effective strategy is the frequent use of “seams of Pangaea”, the water-filled rifts opened up by the break-up of the old supercontinent we would usually call oceans. So Columbus and Cook didn’t cross the Atlantic and Pacific, but the seams left by millions of years of geological formation. Crosby’s term was copied by, several authors, including Charles Mann in the bestselling books *1491* and *1493* that further developed Crosby’s thesis.⁴⁸

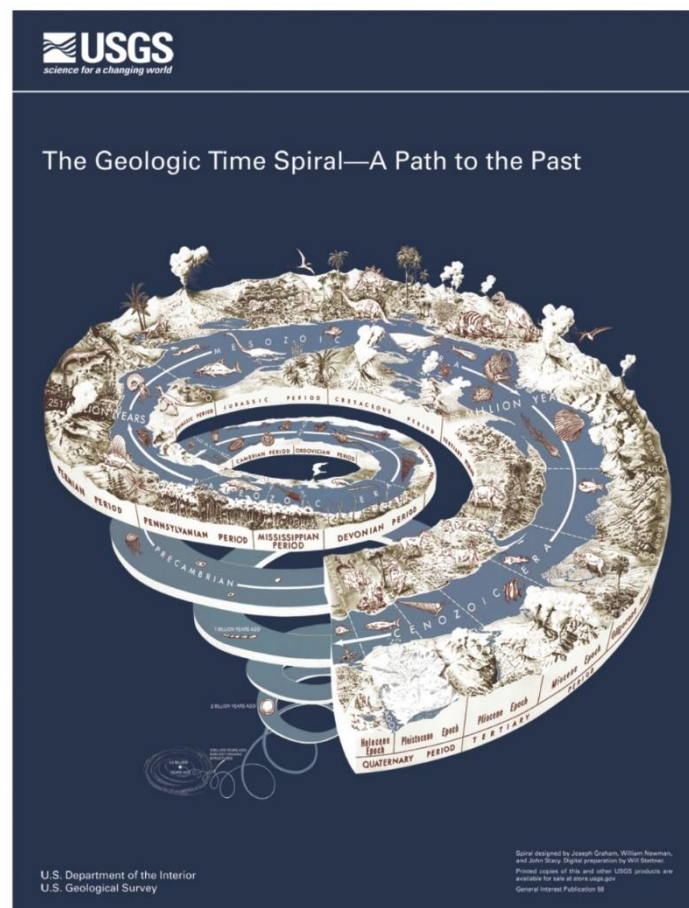


Fig 4.2: A recent visualization of a spiraling deep time by the US Geological Survey.⁴⁹

So, by integrating an eventful story into a long history of similar, though less dramatic, instances of ecological exchange, Crosby created a story with a linear temporality, without losing sight of cyclical nature of background events. The story may end in a spatiotemporal coherent place – the colonized world of 1900 – but its origins cannot be retraced to single point, we simply slow down to the slow rhythms of evolutionary drifts and ecological

⁴⁸ Charles C Mann, *1493: Uncovering the New World Columbus Created* (New York: Vintage Books, 2012).

⁴⁹ In Winterer, ‘The First American Maps of Deep Time’, 164.

invasions. The temporality of Crosby's story is thus best imagined as a stretched-out helix or spiral, which happens to have both the characteristics of modern linear history, as well as a non-modern character, as in Figure 4.2. We could stay on track of the spiral, following every step of the process as if it's a linear process, or jump from cycle to cycle.⁵⁰ This is reflected in Crosby's narrative and semantics, through which the contextualized events are expressed.

Conclusion

This chapter started with Braudel's model, in which the steady pace of evolution became a plausible background for human history. Crosby then followed up with a history in which we see how evolution can turn into drastic revolution. *Columbian Exchange* postulated only a single, isolated revolution at first, but with mounting evidence, in *Ecological Imperialism* this revolution too turned out to fit into existing rhythms of life on earth, a rhythm thrown off course by human intervention. In that sense, with Crosby's hybrid history, we've come full circle; with ecological revolutions figuring in both the meaning of revolution as a drastic change, as well as a simple cyclical motion back into itself. Crosby wasn't alone, his chief contemporary was W.H. McNeill, who pushed a related story with his *Plagues and People* (1976). Later notable authors of Deep, Big or Evolutionary histories are Jared Diamond, David Christian and more recently Yuval Noah Harari, but there are countless others, including Mathijs Deen (in this chapter's epigraph), who all explored versions of hybrid histories.

These forms of helical history come closest to the multiscale histories generally proclaimed to be the future of history in the Anthropocene. By shifting back and forth between spatiotemporal scales, they contextualize human events within geological and evolutionary time. This involves the less-linear type of storytelling that we encountered with Crosby, but also a different vocabulary and different views of agents, as Chakrabarty has often argued. Comparing Crosby's two books reveals the development and challenges that he faced when working well before the Anthropocene was invented. Crosby's storytelling was evocative in the older book, but his narrative and actors within it were also all over the place. In *Ecological Imperialism*, he found a simple effective structure and the words to express it by, but he couldn't yet use terms such as 'globalization', which hardly existed. While, today we are familiar with considering past actors as environmental or geological agents, this chapter has shown that none of this happened automatically, the historization of deep natural pasts involved the imaginative action of historians, as well as earth and natural scientists.

But of course, human-natural pasts are not only deep and big. In the next chapter I will return closer to home, to see how environmental historians mapped the closer, dynamic past.

⁵⁰ This idea of spiral or helix shaped temporalities has often been conceptualized independently (as a key form of multiscale history): Latour, *We have never been modern*, 75; Perovic, 'Year 1 and Year 61 of the French Revolution', 106.

Chapter 5. A chapter without name

The dynamical times of environmental histories

No weather will be found in this book. This is an attempt to pull a book through without weather.

Mark Twain, *The American Claimant*, 1892.¹

Introduction

Environmental history is as much the product of “history” as of the “environment”. As we’ll see throughout this chapter, that environmental historians made history is almost, but not quite, self-evident. The environment is less trivial. So far, I have used the term loosely; applying it to both man-made landscapes as well as true, “untainted” wilderness. Of course, this everyday usage has a history which is deeply entangled with the recent history of environments, in which even the least tainted wild has been affected by acid rain and pollution. Thus requiring a more neutral, abstract and universal term to describe non-human (and human) interaction, the environment quickly rose to fame after the Second World War, while its meaning changed from background or context, to the become the subject itself.²

Thus, through the environment’s lens, historians interested in human-nature relations could view the past more mechanically and less humanized, as opposed to earlier culture-laden options, such as the wild and landscapes. First, this chapter gives a brief account of the diverse times developed by ecologists in this environmental perspective. Next, through discussion of three very different books published between 1983 and 1986, this chapter shows how historians assembled diverse environmental times into histories with the environment flexibly appearing as main subject of their books. Throughout, I show how this process was by no means self-evident and did not go along traditional historicist lines, resulting in temporalities coming from the outside, rather than from inside history.

Ecosystem times

Much like the dynamical world it describes, the road the environment took into our language is not straight and, like the imagination of the earth’s big history, is itself part of a complex cultural history as much as a scientific one. However, environmental historians themselves

¹ Mark Twain, *The American Claimant* (New York: Charles L. Webster, 1892), vi.

² Warde et al., *The Environment*, 2.

generally presented a top-down scientific version in their books, so the simpler linear narrative will do for now.³

In this version, 1935 is an important milestone, when British ecologist Arthur Tansley brought the ‘system’ into ecosystem. Inspired by a plea from philosopher of science Hyman Levy for the ‘scientific usefulness’ of systems as a classifying term, Tansley’s paper ‘The Use and Abuse of Vegetational Concepts and Terms’ examined existing ecological terminology and concluded it was too presumptive and exclusionary.⁴ In particular, Tansley considered the metaphor used to describe natural regions as ‘climax organisms’ poor, for it presupposed a region’s interior stability and overlooked connections to the exterior world. Following Levy’s recipe for isolating a relatively neutral, coherent but connected system, Tansley proposed the term ‘ecosystem’ to pull the field out of the teleological trap of the organism metaphor.⁵

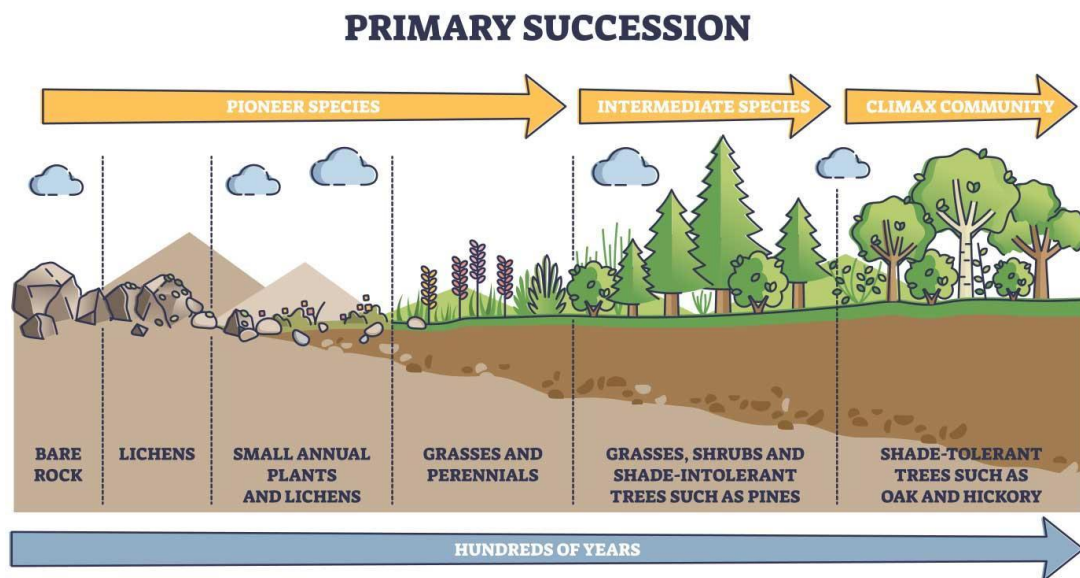


Fig 5.1: A simple depiction of succession towards climax community. Linear succession was the chief point of interest for ecologists well into the 1960s.

Tansley’s positivist reconceptualization would prove highly effective in connecting ecology with other scientific fields. As such, systems-ecology is exemplary for a contemporary move towards systems-based-thinking.⁶ Viewed as a system, an ocean

³ Cronon and McEvoy do so most explicitly.

⁴ Hyman Levy, *The Universe of Science* (London: Watts & Co., 1932), 48.

⁵ Tansley, ‘The Use and Abuse of Vegetational Concepts and Terms’; Warde et al. 73 – 95.

⁶ Alternatives to this linearized version of systems thinking history exist, see for example Daniel Belgrad’s cultural history of ecological thinking in the United States, which investigates, among other important things, the ties between systems and ambient music: Daniel Belgrad, *The Culture of Feedback: Ecological Thinking in Seventies America* (Chicago, IL: University of Chicago Press, 2019), <https://press.uchicago.edu/ucp/books/book/chicago/C/bo42738984.html>.

effectively becomes a scaled up and more complex version of a pond, a view that appealed to geologists, chemists, biologists and physicists, who found their geospheres, hydrospheres, atmospheres and biospheres connected through the mathematical language of feedback loops.

Moreover, the system conveniently brought the human into play without having to talk directly to humanists or social scientists. Tansley had already noted in his 1935 article, when still mostly focused on flora, that ‘anthropogenic ecosystems differ from those developed independently of man. But the essential formative processes of the vegetation are the same.’⁷ By the 1960s, adventurous ecologists even began to explore the city, a previously inhospitable region to them.⁸

When ecologists ventured into urban ecosystems they presumably did not do so in the sturdy leather attire of an adventurous nineteenth century naturalist. What they did bring with them, mentally at least, was a growing toolkit of mathematical models, instruments and concepts. Many worked for wealthy state-sponsored institutes, signposting a great deal of scientifically optimistic post-war investment, motivated simultaneously by a healthy quest to protect the environment, and a perhaps less healthy quest to exploit it as efficiently as possible.⁹ Either way, detailed knowledge of environments steadily grew.

And so did its times. Earlier, there had been fewer times that dominated the lives of the complex organisms. So few, in fact, that we can divide them in three: there was the teleological linear path towards climax, cyclical predator prey relations modelled by the Lotka-Volterra equations and finally the exponential growth of ecological invasions, which were followed by a long stabilizing tail.¹⁰ These laws could be understood on an intuitive basis, and were simply enough to be expressed in high-school mathematics. Within a few decades, the computer-modelled world appeared more complex, containing countless feedback loops, instabilities and even chaos.

⁷ Tansley, ‘The Use and Abuse’, 304.

⁸ Jens Lachmund, ‘The City as Ecosystem. Paul DuVigneaud and the Ecological Study of Brussels’, in *Spatializing the History of Ecology: Sites, Journeys, Mappings, Routledge Studies in the History of Science*, ed. Raf de Bont and Jens Lachmund (New York: Routledge, Taylor & Francis Group, 2017), 141–62.

⁹ *Ibid.*; Etienne S. Benson, ‘Ecosystem Simulation as a Practice of Emplacement. The Desert Biome Project, 1970 - 1974’, in *Spatializing the History of Ecology: Sites, Journeys, Mappings, Routledge Studies in the History of Science*, ed. Raf de Bont and Jens Lachmund (New York: Routledge, Taylor & Francis Group, 2017), 121–42.

¹⁰ Turchin, ‘Does population ecology have general laws?’

These were the times environmental historians encountered when writing their histories, their task being to funnel these diverse times into a story. Note that in doing so, they were not always looking only at ecologists directly. Other human sciences, particularly anthropology and economy, were likewise affected by system ecological views, and historians wishing to borrow insights from them thus encountered fields embroiled in a similar type of soul searching as we'll find amongst environmental historians.

***Changes in the Land* – History without story**

When the still very young William Cronon managed to get *Changes in the Land* published in 1983, he was among the first historians to take up the inherently integrative idea of the environment in full, holistic glory. The ambitious book would set the tone for much of the rest of the budding field of environmental history, at least for those studying economic-ecological relations.¹¹ In a later book, *Nature's Metropolis* (1992), Cronon would finally reduce his approach into conceptual form when envisioning Chicago as an environmental actor, contrasting “first nature” (original, prehuman nature) and “second nature” (the artificial nature that people erect atop first nature).¹² Like the later book, *Changes in the Land* departed from such a relativized view of nature, taking the ambiguities of the man-made and nature-made, the first versus the second, head-on when looking at the history of the landscape in New England throughout the colonial period.¹³ The holistic approach puts the human (Indigenous American or European colonizer), its economies and the social structure behind these economies into nature, ‘for only by so doing can we find human communities which are inside rather than outside nature.’¹⁴ An enthusiastic Times reviewer commented: ‘Ecological relationships make a kind of jigsaw puzzle with, first, one piece fitted laboriously to its neighbour, then whole sections coming suddenly together. And Mr. Cronon is truly a puzzle master.’¹⁵

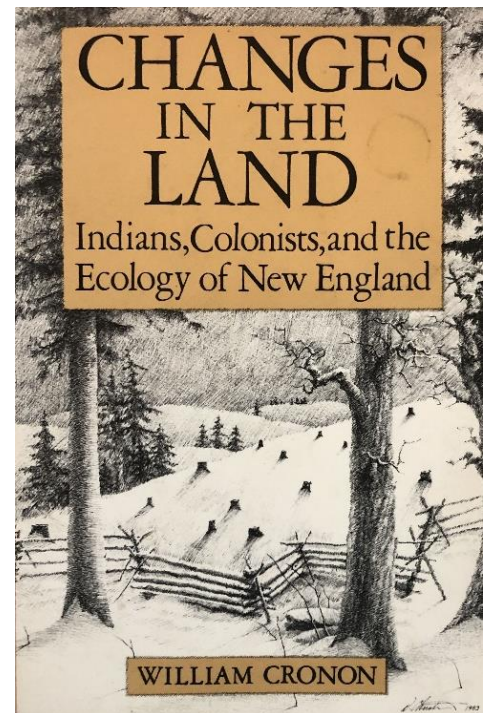


Fig 5.2: Cover of *Changes in the Land*
Reading a book by its cover, two key features of Cronon’s colonial landscape stand out, a cleared forest and fences. But covered in snow the land preserves its neutrality, and is home to the great paradox of early colonisation, being more hostile to Europeans than colonists.

¹¹ Dan Flores, “Twenty Years on: Thoughts on “Changes in the Land: Indians, Colonists, and the Ecology of New England””, ed. William Cronon, *Agricultural History* 78, no. 4 (2004): 493–96.

¹² William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: Norton, 1992), xix.

¹³ Here I am copying Cronon’s definition of landscape, which is a decultured version. See Chapter 6 for more on environmental/cultural landscapes.

¹⁴ William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England*, 1st rev. ed., 20th-anniversary ed (New York: Hill and Wang, 2003), 15.

¹⁵ John Demos, ‘A New World of Fields and Fences’, *The New York Times*, 20 May 1984, <https://www.nytimes.com/1984/05/20/books/a-new-world-of-fields-and-fences.html>.

Of course, a summary cannot do justice to the complexity of this puzzle, but we can identify the distinct type of puzzle pieces Cronon designed. The first was the New England landscape as a dynamic and diverse actor. Rooted within system's ecology ideas and historical ecological research, Cronon posited that 'ecosystems have histories.'¹⁶ So, rather than thinking of the New England forest as uniform before European conquest, as it had often been taken to be, Cronon argued that since the last ice age

catastrophes—whether of fire, wind, or disease —continued to create drastic alterations of specific habitats even as general climatic trends were continuing. ... Events of this kind were not merely cyclical or self-equilibrating. They constitute a history of the ecosystem in which a unique linear sequence was imposed on the regularly recurring processes which ecology as a science seeks to describe.¹⁷

Through this history, a patchy, disordered landscape was created over millennia. But that's not all, as Indigenous Americans, the second puzzle piece, had co-created the patchwork when continuously adapting to the changing environment, which they themselves affected significantly. The most visible traces left in the soil were the controlled burning of forests for agriculture, hunting and fire prevention.¹⁸ By viewing Indigenous Americans as impactful, Cronon effectively laid out an early version for his later argument on 'the trouble with wilderness,' which he directed at historians and a broader public in 1995. In this earlier version, he was still mostly preoccupied with the more technical legacy of the wilderness myth in the functionalist school of anthropology and climax ecology:¹⁹

[The] functional approach to culture has the same penchant for teleology as does the organism model of ecological climax. Saying that a community's rituals and social institutions "function" unconsciously to stabilize its ecological relationships can lead all too quickly into a static and ahistorical view of both cultural agency and ecological change.²⁰

This is not to say that Indigenous American economic and social practices were exploitative, as the lack of commodification and social hierarchy reduced destructive tendencies. Putting a posh beaver fur on one's head simply didn't make sense to Indigenous Americans. Rather, the semi-nomadic subsistence lifestyle of Indigenous communities were highly adaptive, or, in modern terms, sustainable.

The third puzzle piece is, of course, the European colonizer and their capitalist economy. Cronon coupled the abstract characteristics of capitalism (property rights and

¹⁶ Cronon, *Changes in the Land*, 12.

¹⁷ *Ibid.*, 32 – 33.

¹⁸ Burning as prevention was only gradually being rediscovered at that period, see note 44 of this chapter.

¹⁹ In his bibliographical essay, Cronon notes 'Anthropologists have engaged in extensive discussion of how ecological theory should be incorporated into the study of human populations', and provides a long list of references about this discussion. See: Cronon, *Changes in the Land*, 218 – 219.

²⁰ *Ibid.*, 12 – 13.

capital) to their direct manifestations (fences and exploited pigs) which affected the landscape and which eventually had dramatic ecological effects (soil degradation, erosion and deforestation.) However, Cronon was careful to avoid functionalism again, pointing out how European invaders hadn't marched straight to exploitation, just as Indigenous communities had not been automatically stable. For example, through naive letters sent back to Europe during springtime, Cronon showed how early colonists had been ignorant about the rhythms of their newfound paradise. Keeping small stocks for winter and with poor hunting skills, famines were much more common amongst early colonists in 'seasons of want' than amongst Indigenous Americans.²¹ Only the gradual tuning of the landscape to capitalist economy, and *vice versa*, meant that ecological relationships began to structurally resemble the ones still present today.

This new synchrony marked the successful conquest by colonists, but was complemented by a huge loss amongst the indigenous communities. This was a loss of life, mostly by Columbian Exchange-related epidemics, a loss of traditions and knowledge, and also a loss of impact upon the environment. In his later commentary on the social construction of the wild, Cronon explained how ironically, it was through this loss that the New World landscape appeared as 'pristine' to colonists.²² Additionally, Cronon described how Indigenous communities adapted to the colonists' lifestyle, becoming enmeshed in their trade network. The Indigenous American as a sort of *Homo Economicus* was a somewhat controversial picture; one bitter reviewer objected that 'Cronon's Indians could work on Wall Street.'²³

By the late eighteenth century, most Indigenous Americans had perished and much of the land had been severely damaged, but the new capitalist ecological relationship had stabilized as well. So here, the Cronon's narrative slowly faded out, with a blueprint for further industrial exploitation in place.

Cronon's 'puzzle' is thus one of countless processes, rhythms and events running into, out of and through the New England landscape. The overarching narrative is about the cocreation of a new ecology and economy, transforming one dominated by Indigenous Americans to a modern capitalist one. But the plot contains countless subplots. For example, there is a background of autonomous ecological change, quietly impacted by the ongoing Columbian Exchanges. Next, the most visible changes are those of the establishment of relatively static ecological-economic relations, including the clearing of forests, fences appearing in the land and, by consequence, forests drying up and depleting resources. But economic relations had a social counterpart as well, like the strengthening of exterior trade relations, changing cultural and legislative perceptions of the land, and also growing welfare with its

²¹ *Ibid.*, 34 – 54.

²² And later authors, including Thoreau, whose Walden Pond had likely been home to Indigenous Americans before. This he pointed out already in the first chapter of *Changes in the Land*, 'The View from Walden', 3 – 18.

²³ Calvin Martin, review of *Review of Changes in the Land: Indians, Colonists, and the Ecology of New England*, by William Cronon, *Pacific Historical Review* 53, no. 4 (1984): 507, <https://doi.org/10.2307/3639421>.

accompanying urges. Finally, the economic-ecological relations are themselves temporal in roughly the helix-shaped form we saw in the previous chapter, evolving linearly while attuned to the seasonal patterns of the land.

Rather than stuffing these times into a linear story, *Changes in the Land* merely illuminates many processes and patterns, guiding the reader through with a bird's eye view, rather than restraining them to the single story. All of this is only possible, due to the open-ended, non-teleological temporality of the book's structure and narrative itself. Its open-endedness and timelessness makes its temporality hard to grasp in modern conceptions. Paradoxically, very little time is to be found in the book, precisely because there is so much time. There is no independent chronology or periodization, there are no "revolutions" or "radical breaks", no people placed in time. When settlers and Indigenous Americans collided, they lived completely asynchronously, and Cronon left it as such.²⁴ In fact, the absence of temporal markers is almost sufficient to describe the temporality itself. But this is not very illuminating, and Cronon was clearly uncomfortable about the absence of times in a history as well. So at several points he justified his choices, especially in his vocabulary and at the endpoints. Let's study these in a bit more detail.

After all, beginnings and endings are a problem for an author writing an open-ended book. Unfortunately, readers generally start at the beginning, and Cronon's evasive strategy in his first chapters was technical and "meta": he did not describe a setting at the start, but only the historicity of that setting. So the account of the pre-Columbian New England forest, following the book's technical introduction, is purely qualitative. He described it as a patchwork, but more important is the description of its historical character, ruled by 'catastrophes—whether of fire, wind, or disease' in combination with internal rhythms and external changes in climate.

At the very end of the book, Cronon used a different strategy to make an anti-ending. Here, he started off with a classical, almost stereotypical, 'two-point' comparison of the book's endpoints.²⁵ First he described how at one end, one *could* imagine New England in 1600 as a diverse combination of wild and pastoral lands we might well view as lush, a peaceful home to semi-nomadic subsistence communities. At the other end is colonized New England in 1800: a capitalist's dream, producing timber and beaver furs, but a nightmare for a modern day environmentalist and, more significantly, the few Indigenous peoples left. 'And yet the problem is not quite so simple,' Cronon continued, fearing that this two-point picture suggested only European agency, obscuring the changes brought on independently by the New England ecology, the Columbian Exchange and Indigenous people.²⁶ Effectively, this final chapter summarized the many processes indicated above, by making a historiographical argument against linear historicist narratives. There is some irony to this strategy, for by arguing against linear history, Cronon effectively portrayed a picture a reader might not have

²⁴ The mechanisms of "synchronizing" peoples in (early) modern history has been topic of substantial debate in theoretical history recently, headed by Helge Jordheim. See for example: Jordheim, 'Making Universal Time.'

²⁵ Cronon, *Changes in the Land*, 161.

²⁶ *Ibid.*

even seen themselves.²⁷ Something similar is true for the book's core chapters. These are thematic, dealing with specific processes, but did contain a storied element as well.

Still, these stories were placed out of time as much as possible. This was partially achieved by a disavowal of historical vocabulary. Terms such as "New" and "Old World" are used exclusively when writing from a European standpoint. Such choices are occasionally justified by Cronon, as they are key to his ahistoricist storytelling:

The colonists themselves understood what they were doing almost wholly in positive terms, not as "deforestation," but as "the progress of cultivation." The two descriptions were in reality simply inverse ways of stating a single fact: the rural economies of Europe were adapted to a far different mosaic of ecological habitats than were precolonial Indian economies. Reducing the forest was an essential first step toward reproducing that Old World mosaic in an American environment.²⁸

With its negative connotation, deforestation doesn't merely falsely suggest a teleology – colonists cut forests for trade and to clear land, not to 'deforest' – but it also overlooks the new ecological relations which may arise; land may be deforested, but that doesn't necessarily mean it is barren.

In its ahistoricist message, vocabulary and structure, *Changes in the Land* is a history without story, at least without the conventional story that Cronon dedicated his 1993 article to which was discussed in Chapter 3. A place made of storiesThe book didn't order its times, but left this ordering to the reader, as if we're navigating ourselves through an Andrey Tarkovsky film or a Rem Koolhaas building, never really knowing if we've entered or left. This is by no means the only possible way an environment can be depicted, as Arthur McEvoy's classically periodized *The Fisherman's Problem* will show.

***The Fisherman's Problem* – The mirror of the fish**

It is almost a truism amongst seamen that the ocean is an ultimate reflector of human conceit, a vast and mysterious frontier, with at the end only oneself to meet. Indeed, much of Herman Melville's *Moby Dick* is about just this mirroring.²⁹ Or consider Joseph Conrad's (fictitious) memoirs of his life in the merchant navy:

All the tempestuous passions of mankind's young days, the love of loot and the love of glory, the love of adventure and the love of danger, with the great love of the unknown and vast dreams of dominion and power, have passed like images reflected from a mirror, leaving no record upon the mysterious face of the sea. ... Unlike the earth, it cannot be subjugated at any cost of patience and toil.³⁰

²⁷ I, for one, was such a reader.

²⁸ Cronon, *Changes in the Land*, 126.

²⁹ See for example: Herman Melville, *Moby-Dick: Or, the Whale.*, Penguin enriched ebook (New York: Penguin Books, 2009), 375.

³⁰ Joseph Conrad, *The Mirror of the Sea* (Project Gutenberg, 2003), 94.

Arthur McEvoy's *The Fisherman's Problem* (1986) describes the sea as such an environment, and the people who in vain tried to subjugate it. Published just a few years after Cronon's *Changes in the Land*, McEvoy departed from a similar dynamic ecological standpoint, but applied it to a vastly different environment. Though the book is largely forgotten by now, it was received with considerable praise in its time.³¹ If Cronon's people are within their landscape, obviously ignorant and with no one responsible for damage done, in McEvoy's book there are two very different actors, with unequal agency. On one side there is the sea – in particular the wild fish off the coast of California – and on the other side the people who exploited it – fishermen, ecologists, legislators and industrialists – thinking they knew what they were doing; and still the sea eventually retaliated when fish populations collapsed. *The Fisherman's Problem* is a history of ignorance,³² uncovering the enigmatic mechanism behind the collapse through a careful bookkeeping of fish population between 1850 and 1970, and the human ignorance thereof, tracing how scientists and fishermen were lured again and again by a false belief in nature's tendency towards equilibrium.

McEvoy's attempt to unravel the dynamics of fish populations belonged to a larger, urgent contemporary quest. The Californian fishing industry had once been booming, but suddenly and unexpectedly, sardine and anchovy stocks collapsed in the late 1940s, taking the blossoming industry down with it. Even careful biologists had been surprised by the 'sardine riddle', and significant sums of money were released by governments aiming to rebuild a more durable industry.³³ The resulting new research institutes started performing intensive systematic sampling routines and called upon colleagues elsewhere to the same.³⁴ To this day, the California waters remain among the best studied in the world.³⁵ The new agencies also granted money for historical soul-searching; McEvoy's book is the result thereof.

The story started in a similar place as Cronon's *Changes in the Land*, with an evocative account of the not-quite-static and impactful fisheries of Indigenous Americans in California. McEvoy argued that Indigenous American populations were 'confronted with the same challenges of environmental uncertainty and vulnerability to depletion that continue to plague modern resource managers.'³⁶ In fact, as a sort-of *pièce de résistance* of modern industrial exploitation, they even seem to have pushed the sea otter to extinction in some regions.³⁷ However, quite in contrast to the slow entrance into Cronon's narrative, here the

³¹ The George Perkins Marsh Prize in 1989. See also: William Cronon, 'Modes of Prophecy and Production: Placing Nature in History', *The Journal of American History* 76, no. 4 (1990): 1123.

³² In this sense, McEvoy's history is a version of "Agnatology, which studies the production of zones of ignorance", to which Bonneuil and Fressoz dedicate a chapter. See: Bonneuil and Fressoz, *The Shock of the Anthropocene*, 187 – 207.

³³ McEvoy, *The Fisherman's Problem*, 200.

³⁴ Paul E. Smith, 'Biological Effects of Ocean Variability: Time and Space Scales of Biological Response.', *Rapports et Proces-Verbaux Des Réunion, Conseil International Pour l'Exploration de La Mer (Denmark)* 173 (1978): 117–27.

³⁵ According to themselves, at least: <https://calcofi.org/>.

³⁶ McEvoy, *The Fisherman's Problem*, 38 – 39.

³⁷ *Ibid.*, 19.

story starts much later and more suddenly, as the colonization of the region happened ‘with apocalyptic ferocity’ in the 1850s.³⁸

The next step in McEvoy’s chronology is a period in which the first signs of decline set in, prompting legislative agencies and ecologists to limit fishing (and pollution). Though preventing overfishing, few of their successes were a result of their own actions. When congratulating themselves for their ‘well-earned reputation for scientific achievement equalled by few governmental agencies’ at the beginning of the twentieth century, these successes were in reality due to an anomalous climatic period boosting fish populations, McEvoy showed.³⁹

McEvoy continues to show that as fisheries industrialized, legislators gradually developed a system of fishing quota according to the concept of a Maximum Sustainable Yield. With the MSY model, a maximum harvest is calculated based on the annual ‘production’ of biomass which can be sustained perpetually, taking into account the harvest costs. Backed by a series of equations, the model showed that a heavily fished population will at some point dramatically drop in producing new adults, in which case the costs of fishing skyrocket, so a balance must be struck. This was a very rough model at best. Wild animals live in wild times; fish migrate into rivers and across oceans responding to many environmental factors and therefore have, as biologists eventually realized, more complex lifecycles than the linear ones postulated in the first models. As McEvoy described, ecologists, economists and legislators aware of this complexity were always catching up with the industry’s wishes, so by the 1950s, what had been supposed to be sustainable turned into a massive disaster. Only then did more thorough restrictions begin to set in, which were more adaptive to the erratic behaviour of fish populations.

McEvoy’s book is structured strongly periodically: there is a distinct break between a pre-Colonial, pre-industrial, industrial and post-collapse epoch, covering just over a hundred years in total. This periodization makes sense for two reasons. Firstly, the episodic approach contains a more compelling message than one without, such as Cronon’s, which safely dissolved responsibility. McEvoy did not point to individual perpetrators, but clearly, industrial society was to blame. Whether we like it or not, the most effective narrative strategy is clearly to side with the modern tendency to think periodically, even if it wouldn’t have been apt.

³⁸ Just as with the recovery of New England forests after the destruction of Indigenous Americans, McEvoy explains how the sudden destruction of Indigenous American communities gave way for a revival of fish populations in the brief period before the development of a significant industry. Here again, this revival added to the fiction of the pre-colonial landscape as pristine. *Ibid.*, 41.

³⁹ Robert Connery, *Governmental Problems in Wild Life Conservation Studies in History, Economics, and Public Law* (New York: Columbia University Press), 142 **cited in** McEvoy, *The Fisherman’s Problem*, 116.

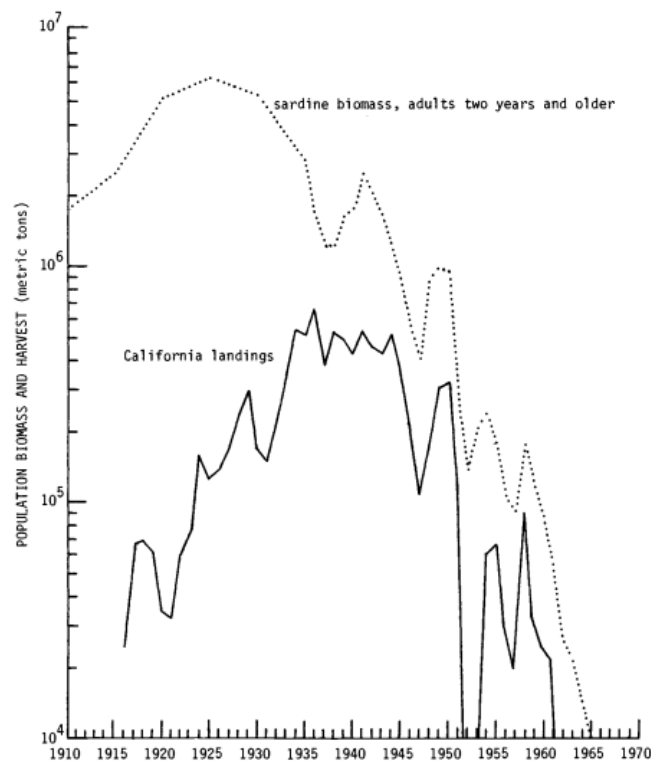


Fig 5.3: Sardine population and California harvest, 1910 – 1965⁴⁰

Recorded fish populations and harvests reflect the periodic character of industrialization.

But it is quite apt, we may even say the periodic approach is “right.” So, secondly, McEvoy considers ‘nature is a very careful accountant’ – for every action there is a reaction – and when it comes to fish populations, this reaction is relatively quick, allowing periodization.⁴¹ Compared to other chaotic factors, most importantly the weather, human fishing practices are slow and constant, even if they change within the space of just a few years, such that episodes of human history leave a distinct imprint in the graphs of annually landed fish Figure 5.3. This is true for landmark changes in fishing practice itself, but also key events in human history, such as the Great Depression or Second World War.

In a sense then, the fish in the sea mirror the human ‘love of loot’ on a large scale, McEvoy concluded:

A dynamic, mercurial nature, the behavior of the industry, and the legal processes through which society perceived, analyzed, and intervened in the interaction between fishers and fished evolved together over time, each changing in constant reflection of changes in the other two. The ecology of the fisheries at any point was to a significant extent the product of present

⁴⁰ *Ibid.*, 151.

⁴¹ *Ibid.*, 9.

and past human impacts on it. ... [Society] created both itself and its environment in its own image. Its experience with any particular fishery was necessarily, therefore, nasty, brutish, and short.⁴²

Fish then, are surprisingly modern, but only because we make them to be, by paradoxically relying on them in a perpetual *Man vs. Wild* clash. The environment humans shaped in this case, and the people the environment shaped, were significantly different from Cronon's landscape, but there still was an obvious one-to-one connection, and therefore still linear times. This need not be the case though, as fire's history shows.

Fire in America – Fire as protagonist

'Fire is an event, not an element', 'fire is plural, not singular', 'fire is power.'⁴³ Fire is many things in Stephen J. Pyne's *Fire in America* (1983), though perhaps most remarkably, fire is not just the topic, but it is the protagonist too. In the book, Pyne showed how fire has acted besides humans in history, without personifying fire itself. Like Cronon's *Changes in the Land*, Pyne's work has been very influential for the budding disciplines of environmental history and historical ecology.⁴⁴ And like McEvoy's book, Pyne's history was aimed partially at managers, with the goal of improving policies after recent disasters, of which Pyne had first-hand experience as fire-fighter.⁴⁵ This experience was necessary for sketching fire as an actor; clearly fire is not a regular actor, for fire is ephemeral, vastly non-continuous as it appears and disappears, non-cumulative in its power to destruct. But it is not completely random, and *Fire in America* is an attempt at showing the linear amongst the non-linear. In doing so it explored the fringes of what can still be termed history, making the reader think not just at different temporal scales than usual, but at loosely connected times in general.

Pyne's historical didactics consist of showing that even the most obviously human-made wildfires have historical characters, which had come to America in different waves. First, Pyne described the long history of 'nature's fire', which dominated fire in America until the Pleistocene, when no humans roamed the Old World.⁴⁶ It is to this period that we owe pyrophytes, types of vegetation evolved to depend upon regular wildfire.⁴⁷ The second wave,

⁴² *Ibid.*, 254.

⁴³ Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire*, Cycle of Fire (Seattle: University of Washington Press, 1997), 530 – 531.

⁴⁴ William L. Balée, 'Historical Ecology: Premises and Postulates', in *Advances in Historical Ecology* (Columbia University Press, 1998), 13–29.

⁴⁵ As Pyne would later admit, from his embedded vantage point he struggled with the unfolding 'tragedy of American fire' in which massive wildfires had become very prevalent. This, he later realized, had been the direct result of the combination of fire suppression and lack of controlled burning, that created vast highly flammable regions. Controlled burning would be reintroduced later in probably the most evocative revival of Indigenous culture, still famous (and necessary) today. See: Pyne, *Fire in America*, xviii; 'Aboriginal gemeenschap heeft oplossing voor natuurbranden', *NOS*, 21 July 2022, <https://nos.nl/artikel/2437759-aboriginal-gemeenschap-heeft-oplossing-voor-natuurbranden-wereldwijd>.

⁴⁶ Pyne, *Fire in America*, 6 – 65.

⁴⁷ *Ibid.*, 69.

'Asian Fire', was characterized by the careful managing of fire for agriculture and hunting by Indigenous Americans. Like in Cronon's and McEvoy's accounts, this assertion was somewhat unorthodox, though Pyne didn't dwell on it for long.⁴⁸ The third wave is the fire associated with the European, which is characterized by the remaking of the land in an agricultural and industrial form and coupled to a steep rise in uncontrolled human-induced fire, giving it a more erratic and dangerous character.

Like waves on water, these waves of fire superimpose in a semi-predictable fashion. Consequently, unlike a *longue durée* history, the oldest layer of history is still active today and hasn't changed character, although the other two waves of fire have changed its form. As in McEvoy's *The Fisherman's Problem*, the mismanagement of fire must be understood by the human ignorance of natural timescales. This time not because they are too fast, but too slow and unpredictable for modern comprehension.

In practice, this almost biographical account of fire is told in a linear chronological order, though a peculiar one which uses only scattered exemplary events, which are not immediately connected, fitting into a modular structure. Effectively mimicking the volatile character of fire itself, short accounts flame up here and there, illustrating the unique and isolated encounters humans have had with particular types of fire. Reading this scattered narrative is not always easy, as Cronon would later describe in a foreword to an anniversary edition:

The challenge of its [=fire's] history is learning to understand and accept the ineluctable, shape-shifting reality of its being. Any narrative that gives fire pride of place—at the center of the hearth, as it were—thus tends to challenge our most basic assumptions about agency, empathy, progress, and heroism—not just of fire, but of humanity itself.⁴⁹

In conclusion, *Fire in America* is a complex hybrid of a non-linear and linear history, making its argument not by drawing out connections per se, but in an impressionist encounter with portraits and characterizations of fire. It need hardly be said that Pyne did not borrow this explorative temporal structure from any academic field. Rather, it came from the burning fields he encountered on the North Rim of the Grand Canyon as firefighter:

My determination to use fire as an informing presence did not spring from philosophical conviction or historiographical insight. It simply reflected how I had learned to talk about fire. ... [As firefighters] we described our fires' quirks while hunched over ration coffee on late-night firelines, we compared our fires' ease and misery when we returned to the fire cache, we sang and cursed our fires at the saloon. They all, each one, had a personality. There were charmed fires and ugly fires, glorious fires and fires that were existentially wretched, fires rich with loose dirt and mean fires that burned amid nothing but roots and rocks.⁵⁰

Moreover, his experience with fire as an historical actor was reflected in the book's design:

⁴⁸ *Ibid.*, 66 – 122. See also note 45 of this chapter.

⁴⁹ Cronon, 'Foreword', in Pyne, *Fire in America*, xiii.

⁵⁰ *Ibid.*, xv.

The manuscript would resemble the looseleaf training manuals and fire-danger ratings systems I had known on the Rim, their dated sections constantly replaced by insertions. ... The book's design (so I imagined) was a literary equivalent to the structural grid so fundamental to Modernist architecture.⁵¹

More plainly than in Cronon's and McEvoy's cases, Pyne's meditations indicate a deep connection between the book's subject, form and thesis. Reading Pyne's book doesn't just inform one about the historical characteristics of fire, but it is an imaginative encounter with fire as a historical character, which clearly cannot happen along the usual narrative lines.

Conclusion

Pyne, Cronon and McEvoy all depart from an attentive perspective in which no time is imposed upon their subject, with its historicity the very thing studied. In a sense, this attentiveness is similar to Braudel's, who sought the most evocative amongst three temporal layers, though here the diverse times of "the environment" leave more to choose from, as the environments presents a vast expanse of different types of ordered time, at various scales and along different lines. Though still trying to make history, all authors were occasionally pushed to disciplinary edges, writing history without story or in a scattered, nonlinear way, actively trying to allow their readers to engage with the narrative from multiple standpoints. However, McEvoy's work shows that the end result might still appear very orthodox, for the environment can also mirror our own modernity.

Within each book and in later reflections, the authors all gave accounts of their difficult writing processes. Of course, books are always the accidental outcome of countless little mishaps, yet the reflections here seem less coincidental, going into the origin of the epistemological struggle within the books. Particularly Cronon ('A history that almost wasn't') and McEvoy discussed an enduring experience of friction between normative history and their innovative projects.⁵² These issues were in part practical, as one might expected for innovators in a conservative world; Cronon's and McEvoy's history almost weren't simply because they struggled to find publishers, as what is now known as an established genre hardly existed back then. But their discomfort was also intellectual (or even existential), for best epistemic practices they had learned simply didn't fit the character of their stories; a type of discomfort with modernity signalled earlier in Chapter 2. Their answer to this discomfort was the same as for so many others responding to modernity, seeking inspiration elsewhere to create a hybrid, as McEvoy did, or conjure a radical philosophical argument, as Cronon did.

In each case, the result was a narrative in which the temporal character of the subject was reflected in the fabric of narrative and vocabulary. We encountered an open-ended

⁵¹ *Ibid.*, xv – xvi.

⁵² These reflections were drawn up in the 20 and 10 years anniversary editions respectively. See: Cronon, 'Afterword: The Book That Almost Wasn't', *Changes in the Land* 171 – 186; Pyne, 'Preface to the 1997 Paperback Edition', *Fire in America*, xix – xxi.

landscape in open-ended book, a periodized human-fish population in a periodized book and a scattered narrative for scattered fire. Curiously, this act of mirroring the subject in storytelling is very similar to the dualistic stories we saw in Cronon's discussion in Chapter 3. There too, a transformative nature was mirrored by a transformative plot arc.⁵³ However, whilst these stories were part of a coherent collection of methodological, epistemological and ontological convictions about a storied reality, environmental histories did without such commitment. Echoing Tansley's early adoption of the ecosystem as a neutral and integrative term, the systems-view of environments in history was liberated from a storied teleology. Hence, epistemology could be borrowed from elsewhere, whether from a firefighter's training manual or graphs of fish populations. Or from the field itself; environmental historians and landscape historians frequently argue the only way to learn their trade is to go outdoors. Also, the ontological weight was generally shifted (rhetorically) to the technical times of ecology. As opposed to internally coherent construction of earlier dualistic stories, the temporality of environmental histories was thus the result of much broader synthesis of cultural times.

However, as forms of nature-culture dualism were a benchmark for American environmental historians, seeing man and nature as one whole was never a trivial matter. Neither was the disconnected environmental playing-field of the Anthropocene ever in sight. In their American histories, changing the environment was done by digging, sowing, hunting and ploughing, but never through emission of greenhouse gasses and pollutants.⁵⁴ In the next chapter I will therefore explore several manifestly different angles on nature-culture relations, each with a correspondingly different temporality.

⁵³ That is, if Cronon's depiction of these histories is at all apt. I have casually checked several, and Cronon doesn't seem to completely miss the mark, but of course, we cannot take his judgement for granted, as he couldn't see anything but story. I admit, this requires further analysis.

⁵⁴ Given the attention to pollution in the 1960s and 1970s, one might expect environmental historians to have studied historical cases. This seems to have been hardly the case, particularly in the U.S. McNeill, 'Observations.'

Chapter 6. From semi to third nature

Times beyond the environment

*hier gaan over het tij
de maan de wind en wij*

Ed Leeflang.¹

Introduction

I grew up in the picturesque town of Amersfoort, which can proudly boast to house two “mountains” and one boulder. The climb to the top of the more prominent of the two hills is, of course, short, but for Dutch proportions, it gives an awesome view over the shallow valley carved out over a hundred thousand years ago by the glacier that pushed up the very hill you are standing on. That is, if you manage to catch a glance of the panorama between the mammoth villas obstructing the view.² The smaller of the two hills is in a nearby forest. Technically speaking it is just a heap of sand, dug out, powered by muscle only as part of an unemployment relief project in the crisis of the 1930s.³ The boulder is haunted by an even more pointless origin story; it was hauled to the town by poor citizens as part of an aristocrat’s bet in the seventeenth century. Now put on a pedestal in the city centre, the boulder is the most visible reminder of the town’s geologic history, and its history of social inequality.⁴

Like any other landscape, the one I grew up in was evidently the product of geological and human forces. But as thousands of years of civilization have left their marks, it is hard to imagine the prehistoric woolly mammoth-ridden times when the landscape’s rough outlines were created. As we have seen, American environmental historians faced a very different challenge. Their project was to go back in time a few hundred years and not envision a *primordial* landscape, but a dynamical one that was, at least potentially, human-made. So, a person’s life-world matters when it comes to a perception of an environment, and historical imagination thereof. Besides the culturally constructed views of a local or global

¹ Ed Leeflang, poem at Neeltje Jans.

² Roland Blijdenstijn, *Tastbare tijd 2.0: cultuurhistorische atlas van de provincie Utrecht*, Vierde geheel herziene en uitgebreide druk (Utrecht: Provincie Utrecht ; Stokerkade cultuurhistorische uitgeverij, 2015), 198 – 233.

³ ‘Amersfoort Toen En Nu: De Bosvijver’, *De Stad Amersfoort*, 25 July 2022, <https://www.destadamersfoort.nl/lokaal/historie/841174/-in-beeld-amersfoort-toen-en-nu-de-bosvijver>.

⁴ ‘Amersfoortse Kei’, *VVVAmersfoort*, accessed 8 September 2022, <https://www.vvvamersfoort.nl/nl/locaties/1298/amersfoortse-kei>.

environment, the local geography and ecology of a person affects one's gaze upon their past, and their future.⁵

In this chapter, I will broaden my gaze beyond the dualistic legacy of American environmental historians by briefly discussing inherently integrated landscape history, more mechanical historical ecology and a recent experimental approach which synthesises the personal with the globalized environment. In each case I point toward their peculiar temporalities, overlap and difference with respect to what we have seen earlier, and potential for history in the Anthropocene. After all, the Anthropocene matters on a local and global scale, and making sense of it requires a mediation on the vastly divergent temporal scales in which humans live. Moreover, this chapter shows that, in contrast to suggestions of radical breaks taking place in history in the Anthropocene, recent histories follow closely in the footsteps of earlier ones in terms of method and content.

Embodied times: landscape history

In contrast to (American) environmental histories, in landscape history a rift between nature and culture was never on the table. In 1979, when the new field had matured enough to warrant some reflection, an American landscape historian noted that 'the idea of landscape runs counter to recognition of any simple binary relationship between man and nature. Rather, it begins with a naive acceptance of the intricate intermingling of physical, biological, and cultural features which any glance around us displays.'⁶ In Europe, where the discipline can be said to have abruptly started with W.G. Hoskins' *The Making of the English Landscape* in 1955,⁷ this integrated view was not just naive, but completely trivial. Already in 1911, British ecologist Arthur Tansley had taken into account 'semi-nature'; regions which owe their 'present form to human activity though not planned by man.'⁸ Or, as Warde et. al put it in their history of the environment: '[in the Old World] all landscapes were already cultural.'⁹

⁵ Although idiosyncratic and situated perceptions of nature have been used to great effect to explain actions taken with respect to planned and unplanned environmental management, interpretation of such perceptions can likely best be done exclusively comparatively, and even then the coherence such "perceptions" remains questionable, see: Bert Theunissen, 'Improving Nature: Victor Westhof and Dutch Nature Conservation in the Post-War Years', in *The Book of Nature in Early Modern History*, ed. Klaas Van Berkel and Arjo Vanderjagt, 1st ed., Groningen Studies in Cultural Change, XVII (Leuven: Peeters, 2006), 258–60.

⁶ D.W. Meinig, 'Introduction', in *The Interpretation of Ordinary Landscapes : Geographical Essays*, ed. D. W. Meinig and J.B. Jackson (New York : Oxford University Press, 1979), 2
<http://archive.org/details/interpretationof00mein>.

⁷ Adding to its impression, Hoskins book was accompanied by a popular TV series and a series of case studies, see: W. G. Hoskins and Christopher Taylor, *The Making of the English Landscape* (London: Hodder and Stoughton, 1988), 7 – 9.

⁸ A. G. Tansley, *Types of British Vegetation* (Cambridge: University Press, 1911),
<https://www.biodiversitylibrary.org/item/115925>, 9.

⁹ Warde et al., *The Environment*, 84.

So, rather than a novel integrated view of society or nature, landscape history directly developed a new perspective upon existing histories – and with it new temporalities.¹⁰

Two confident introductory proclamations in Hoskins' *The Making* would turn out to be very true. As he expected, the book 'opened up a new field of history', as was later widely acknowledged.¹¹ The second proclamation, something of a slogan for Hoskins, was that 'everything is much older than it seems.'¹² In fact, as his followers would show, everything was even older than it had seemed to Hoskins himself. However, opening up new pasts was never Hoskins' main goal. For the author, writing from the very vintage post-war English history departments, landscape history was first and foremost intended for enjoyment, as a mental guide-book to enrich his readers' appreciation of their surroundings. For him, every landscape was like a different piece of music. Grander, older regions would be true 'symphonies', whilst the 'simpler and smaller' landscapes might be like 'chamber music', but in each case 'only when we know all the themes and harmonies can we begin to appreciate its full beauty.'¹³

But of course, there is history in the book, and very traditional English history at that. Through the traces still visible, *The Making* identifies 'the ways in which men have cleared the natural woodlands; reclaimed marshland, fen and moor; laid out towns, built villages, ... everything that has altered the natural landscape' as these men passed through the familiar checkpoints of English history, from Black Death, to the Georgian era, to industrialization.¹⁴ It thus describes how England's 'many wild and secret places' were gradually conquered, and then smothered in the smoke and dust of the Industrial Revolution, or worse, the modern period.¹⁵ So, Hoskins' somewhat presentist perspective on the process of 'the making of the English landscape' is as if it happened as a linear accumulation of traces left by big developments in English history, with only a few fundamental rearrangements since the fifth century. Apart from its beginning, Hoskins' work fitted snugly into traditional temporalities, with a similar linkage of historical epistemology to ontology as seen in histories discussed earlier: 'It is important to show the logic behind the changing face of the English landscape, and only a chronological treatment can bring this out.'¹⁶

In a rare appreciation of the impact of ancient peoples upon history, Hoskins did depart from traditional chronology by pushing back historical boundaries into the Dark Ages. He did so without looking beneath the surface, preferring to read the landscape 'like a palimpsest'. Even without chronology, he showed that the Anglo-Saxons had left significant traces on the landscape, including many settlements that still exist today. In doing so, he did

¹⁰ For a history of the idea of a cultural landscape and its transfer from Europe to the United States, see: Michael Jones, 'The Concept of Cultural Landscape: Discourse and Narratives', in *Landscape Interfaces: Cultural Heritage in Changing Landscapes*, ed. Hannes Palang and Gary Fry, Landscape Series (Dordrecht: Springer Netherlands, 2003), 21–51, https://doi.org/10.1007/978-94-017-0189-1_3.

¹¹ W.G. Hoskins, *The Making of the English Landscape* (London: Hodder and Stoughton, 1955), 14.

¹² *Ibid.*, 17.

¹³ *Ibid.*, 19.

¹⁴ *Ibid.*, 13.

¹⁵ Hoskins didn't hide his critique of modern society's destruction of the landscape. *Ibid.*, 93.

¹⁶ *Ibid.*, 14.

not deny that earlier Celts and Romans had left their marks, but when the Anglo-Saxons arrived in the fifth century, ‘the work had to begin all over again’ as all earlier traces ‘had been lost in weeds, scrub and ruins’.¹⁷

But Hoskins’ slogan would ring true again and again; everything turned out much older than even he could have imagined. Within decades, it had been discovered through archaeological research that even the ancestors of the Celts and Romans should not be overlooked. For example, it turned out much of England had already been deforested in prehistoric times. In addition, the whole idea of a revolutionary arrival by Anglo-Saxons was downplayed, as they were discovered to have stepped into a heavily forged and densely populated landscape, that was by no means ‘virgin’, as Hoskins had thought it had been.¹⁸ So, with subsurface research, two changes in landscape’s temporalities appeared. First, the landscape was disentangled from the periods of socio-economic history, emphasizing continuity rather than radical breaks. Second, the landscape simply aged as it gained more history, by several millennia in just three decades.¹⁹

Besides occasionally deepening and flattening history, later (radical) branches of the discipline have also used landscapes to find alternative, emancipatory ways of assembling pasts, not strictly along the line of political histories. If Hoskins still left most kings on their thrones and businessmen in their offices, others tried to envision histories including peasants with a spade, or miners with a shovel, as they made the land by brute strength.²⁰ Moreover, from the 1960s onwards, some landscape historians effectively began to marry the new dehumanized interpretation of landscape as environment with an older aesthetic and artistic meaning of the term (Wordsworth’s romantic view in Hoskins’ book). If *The Making* made the reader attentive to the different songs of each region, a full shelf of later landscape histories would be a cacophony of different tunes, even if they dealt with the same regions.²¹

Although the marriage of landscape and environment has had its successes, its (superficial) reading remains relevant, as the concept still encapsulates the way through which cultural and personal identities are shaped locally by the everyday encounter with one’s surroundings. For Hoskins, the palimpsest perspective could give almost a “historical sensation” when driving on a road which had also connected settlements for centuries. This

¹⁷ *Ibid*, 37.

¹⁸ *Ibid*.

¹⁹ The 1988 revised version, edited and heavily annotated by Christopher Taylor, points to the omissions in Hoskins’ original which were revealed within just three decades. See: Hoskins and Taylor, *The Making of the English Landscape*.

²⁰ A social historical approach was in ferment in Hoskins’ work though, but it was by no means key. The kick-starter for such social landscape histories was not a landscape history, but a social history: Edward P. Thompson, *The Making of the English Working Class* (London: Victor Gollancz Ltd, 1963).

²¹ Jan Kolen and Johannes Renes, ‘Landscape Biographies: Key Issues’, in *Landscape Biographies*, ed. Rita Hermans, Jan Kolen, and Hans Renes (Amsterdam University Press, 2014), 21–48, <https://doi.org/10.1515/9789048517800-003>; Johannes Renes, ‘Layered Landscapes. A Problematic Theme in Historic Landscape Research’, in *Landscape Biographies*, ed. Rita Hermans, Jan Kolen, and Hans Renes (Amsterdam University Press, 2014), 403–22, <https://doi.org/10.1515/9789048517800-019>.

worked for him and his audience precisely because it related their nationalist identity to their homely landscape. These normative nationalist histories have been carefully relativized by later historians, but the possibility of highly personal meaning-making remains, with David Attenborough perhaps having replaced Wordsworth for informing the masses with mental maps of nature. Thus, historians leaning to anthropology, phenomenology or heritage studies remain interested in the landscape, and its changes. For example, they write from a 'dwelling perspective' or write 'landscape biographies' which contain nested personal biographies as well as a (recent) history of the landscape itself.²² So rather than digging ever deeper, these authors try to make fine-grained human geographies of experience in the land. Temporality-wise, these thus turn back to the individual by investigating the way in which collective pasts are related to a person's embodied experience.

As opposed to demystified environmental histories, a landscape-historical perspective appears to remain valuable in the Anthropocene, as it locally engages with a changing globe. Latour might argue 'moments of what used to be called "history" are taking place on a ground that has lost its stability', but as landscape histories show, this ground has always had a certain instability, and people have adapted accordingly.²³ In my case, it will matter whether Amersfoort and its hills will remain where they are, or become "Amersfoort-at-Sea."²⁴

However, the local landscape perspective has undoubtedly lost some mental ground through the globalization and mechanization of the world, which offers a more disjointed and abstract place to live in. The following two approaches to histories of environments might do more justice to the way people today make sense of their changing surroundings, in which the global and local have merged.

Mechanical times: Historical ecology

If landscape history can be said to be at the cultural end of the nature-culture spectrum, historical ecology, another sibling of environmental history, is at the opposite end. Before branching into more-or-less separate subdisciplines, historical ecologists rode on the same

²² For the 'dwelling perspective' see: Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, 2022, 153 – 288. For landscape biographies, see: Renes, 'Layered landscapes'. For more about landscape historians and landscape perception, see: Stephen Miles, 'The South Oxfordshire Project: Perceptions of Landscape, Settlement and Society, c. 500–1650', *Landscape History* 33, no. 2 (1 October 2012): 83–98, <https://doi.org/10.1080/01433768.2012.739399>; Thomas Birch, 'Living on the Edge: Making and Moving Iron from the "Outside" in Anglo-Saxon England', *Landscape History* 32, no. 1 (1 January 2011): 5–23, <https://doi.org/10.1080/01433768.2011.10594648>.

²³ Latour and Chakrabarty, 'Conflicts of Planetary Proportion – A Conversation', 3.

²⁴ "Amersfoort aan Zee" is a popular slogan to imagine the possible apocalyptic consequences of a climate catastrophe. Rhetorically efficient, but highly unlikely, see: Cokky van Limpt, "'Amersfoort aan Zee? Dat is echt een onzinverhaal'", *Trouw*, 31 January 2012, <https://www.trouw.nl/duurzaamheid-economie/amersfoort-aan-zee-dat-is-echt-een-onzinverhaal~bf0bc903/>. For another paranoid take on the potential cultural historical consequences of climate change, see: Thijs Weststeijn, 'Wat doen de met het Paleis op de Dam', *Groene Amsterdammer*, 10 March 2021, <https://www.groene.nl/artikel/wat-doen-we-met-het-paleis-op-de-dam>.

wave of optimism as environmental historians when they, from the 1960s onwards, aimed to reorganize “humanity” and “nature” into one mechanical whole. We could say historical ecology came from the opposite direction though, bringing ecological principles to the table to study the past of ecosystems, with a healthy respect for both humans and non-humans. However, some environmental historians (Cronon and Pyne in particular) were also considered historical ecologists, the distinction was arbitrary. It still is, but if disciplines need to be told apart, it can best be done based on historical ecologists’ strong emphasis on the nature in nature-culture. As a result, the temporalities in their works are less automatically informed by human ones, which makes for interesting approaches for truly non-anthropocentric types of history.²⁵

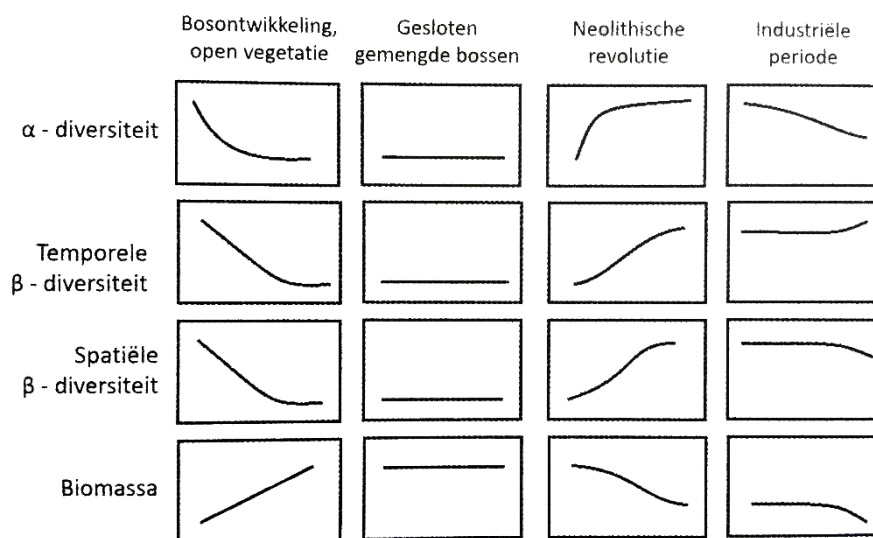


Fig 6.1: Schematic depiction of biodiversity measures in various regions²⁶

Through a wealth of graphs and maps *De Ontdekking van de natuur* argues against a simple teleology of biodiversity.

This is particularly obvious in the recent book *De ontdekking van de natuur: De ontwikkeling van de biodiversiteit in Nederland van ijstijd tot 21^{ste} eeuw*, authored by a group of four Dutch ecologists, ecological historians and economic historians.²⁷ The authors begin by asking, presumably for the first time ever, whether biodiversity has a history, and respond positively to their own question, though not in the way people might expect. The authors argue that people tend to think biodiversity is in free fall, as we’re enduring a “sixth mass extinction event.” This may be the case, but in tracing the fluctuations of biodiversity in the Netherlands

²⁵ Balée, ‘Historical Ecology.’

²⁶ J. L. van Zanden e.a., *De ontdekking van de natuur: de ontwikkeling van biodiversiteit in Nederland van de ijstijd tot de 21ste eeuw* (Amsterdam: Prometheus, 2021), 55.

²⁷ Rather typically for historical ecology (and perhaps its defining feature), the intellectual part of the work is weak. What the ‘discovery of nature’ means, or even what nature means, remains vague. See: Mathijs Boom, ‘Heeft biodiversiteit een geschiedenis?’, *Tijdschrift voor Geschiedenis* 134, no. 3 (1 December 2021): 520–21, <https://doi.org/10.5117/TVG2021.3.025.BOOM>.

throughout the past, they argue this downfall should not be seen as the necessary consequence of human civilization. A healthy biodiverse nature and civilization are not mutually exclusive, so they argue – a hopeful outlook into a future.

Of course, biodiversity as a concept has its own history, making a rapid rise to fame since the 1980s as a measure for the health of an environment without arbitrary human judgement, for example going beyond nature as necessarily wild and isolated from civilization.²⁸ In a period during which environments come under pressure, their biodiversity has been shown to be coupled to its resilience, the ability to re-establish itself, and increasing biodiversity is thus a useful goal in wildlife protection. Even the small patches of nature in the Netherlands can be judged as ecologically valuable, given their role in local and international biodiversity, making the term particularly attractive to Dutch environmentalists.

There is another reason why the historical study of biodiversity is first being attempted to be kickstarted in the Netherlands.²⁹ Researching biodiversity historically is hard. Besides chronological traces in tree rings and soil, as well as fossil remains, it requires a decent record of systematic observations and where that fails, it may be aided by less systematic observations, for example in visual arts. Few countries have such a well-preserved and well-researched nature-cultural archive.³⁰

Tying biodiversity in with agricultural, industrial en environmentalist histories, the book is temporalized largely along the lines of key chapters in Dutch landscape management, including land reclamation, the industrial revolution, *ruilverkaveling* and more recently the “second domestication”; large scale ecological engineering, such as the Oostvaardersplassen and Marker Wadden. Akin to McEvoy, the authors show how biodiversity has been directly coupled to human action through a cascade of graphs on various scales. The slowest scale is evolutionary, with (unintentional) domestications, resulting in agricultural crops, common sparrows and street pigeons. Faster layers are those of changes in landscape usage, both through technological and cultural change, and their impact upon (groups of) species. For example, the authors ask whether the ‘history of nature can be seen through the eyes of a crow’, and proceed to show that changes in public perception leading to reduced hunting had crow populations jump upwards from local extinction around 1900.³¹ The authors occasionally point towards a retroactive influence of biodiversity on human history, but the interaction is one directional. In that sense, *De ontdekking van de natuur* makes biodiversity history appear as a loose tiling of histories which individually resemble McEvoy *The*

²⁸ Like the term globalization (note 43, chapter 4), biodiversity’s rise can most convincingly be captured in a Google NGram:

https://books.google.com/ngrams/graph?content=biodiversity&year_start=1900&year_end=2008&corpus=en-2009&smoothing=0.

²⁹ The methodology of the book is further described by some of the authors in a separate article, published two years before the book, see: Thomas van Goethem and Jan Luiten van Zandem, ‘Who Is Afraid of Biodiversity? Proposal for a Research Agenda for Environmental History’, *Environment and History* 25, no. 4 (1 October 2019): 613–47, <https://doi.org/10.3197/096734018X15254461646440>.

³⁰ Zanden e.a., *De ontdekking van de natuur*, 278.

³¹ *Ibid.*, 176.

Fisherman's Problem, but have only limited collective coherence. So while biodiversity as a whole may not have a historicity, its components do.

The hopeful message of biodiversity history is that the rules of the interaction between nature and culture are not those of a zero-sum game, as the authors suppose many people expect. Society doesn't necessarily oppose biodiversity and even when it does threaten one species, other species have occasionally thrived. For example, though the black-tailed godwit is today the "national bird" of the Netherlands, it was very rare in the country until pre-modern times, as the fens and bogs on which it thrives were still flooded with sea-water too frequently for the birds to breed. The construction of dykes has undoubtedly done massive ecological damage, but has given the Netherlands its national bird in turn.³² Additionally, the author's argue that an awareness of biodiversity's history may make people more attentive to the speeds and rhythms of change in environments, referring to the time-scale on which the Oostvaardersplassen experiment failed, or the current Marker Wadden project may succeed. When looking beyond individual species, it may be easier to accept slow rates of change.

So, the less humanized perspective on nature in historical ecology, abstracted into statistics rather than highly cultural and anthropomorphic views of nature, suggests temporalities refreshingly disconnected from teleological human ones. Furthermore, biodiversity histories may be less exclusive in their view of nature, in contrast to an arbitrary focus on specific species (such as commodified fish) or the supposedly holistic view of an environment (such as the New England landscape) which can overlook non-economic and external factors. Biodiversity histories may thus make people more attentive to the blank spots of environmental change.

Disconnected times: Anna Lowenhaupt Tsing's 'Third Nature'

Holism, coherence, universality. These are just some qualities of genres I have discussed so far, usually as if they were virtues. Yet, originating from a (western) authoritative way of thinking, they might be pitfalls as well. Even if nicely 'situated' and non-teleological, each genre still overlooked countless other possibilities of writing history. Nature measured in biodiversity is deceptively moralistic, more so than its mechanical undertone may make it appear. More species is almost always better, even if it destroys other habitats.³³ The Big-History-nature of Crosby, as well as Cronon's Second Nature, are exclusively economic, as if all humans and non-humans are always marching in step with the general changes of the ecological or economic system they happen to be part of. However, in any system we will find countless dissenting, displaced or hybrid participants living at the fringes of the dominant whole, whose times are hybrid as well.

³² *Ibid.*, 106 – 109.

³³ David McDermott Hughes, 'Third Nature: Making Space and Time in the Great Limpopo Conservation Area', *Cultural Anthropology* 20, no. 2 (2005): 157–84, <https://doi.org/10.1525/can.2005.20.2.157>.

Anthropologist Anna Lowenhaupt Tsing's *The Mushroom at the End of the World* is about such actors, about people living in capitalism who aren't quite the capitalist consumers or producers one might expect, and about 'nature' which is not as simply exploited by capitalism as we have become so used to. It's not about the efficient infrastructure behind farmers and the shelves on which their crops end up being sold as cheaply as possible.

Rather, *The Mushroom at the End of the World* only loosely connects to familiar themes of economic and ecological histories, precisely because it traces the pasts and presents of a loosely connected network of supply chains in which a specific type of mushroom, the matsutake, is traded. Before it sold as a delicacy in Japan, the matsutake is harvested at the scattered patches on which it still grows, for it thrives on (abandoned) production pine forests: 'the ruins of capitalism'. This is not a biome that can be easily planned: the mushroom's rhythms are too erratic and shaping its habitat is not economically viable (on the usual timescales, that is). This moves Tsing to the fringe of the capitalist world, where foragers dwell who are all partially alienated from society. Her ethnographic approach includes portraits of these people, Vietnam veterans, Chinese refugees (and their ghosts), who just as much outcasts as the mushrooms they harvest.

Tsing's book is melting pot of methods from fields such as ethnography, ecology and environmental history, and has had a stormy success within its capitalist market.³⁴ This success is particularly remarkable given the book's complex structure; its narrative is 'a riot of short chapters ... [that] tangle with and interrupt each other.'³⁵ As such, Tsing's book imposes no evident temporality. The history of each patch is manifestly local, the lives of foragers diverse and the life of the matsutake itself irregular. Tellingly, the last chapter is literally an 'anti-ending', not concluding like we might expect.

Interestingly, Tsing's narrative choices are well-motivated, based on distinct philosophical convictions. Whereas we have other authors seemingly reflect their subject's temporality in their structure without explicitly mentioning a commonality, Tsing (except for Hoskins) is the only one to commit explicitly to ties between narrative structure and ontology. 'My experiment in form and my argument follow each other', she argues, and this scattered form is a direct attempt at 'mimicking the patchiness of the world' in which the matsutake itself grows.³⁶ Moreover, the 'anti-ending' is derived from an ethnographic conviction: 'muddling through with others is always in the middle of things, it does not properly conclude.'³⁷ Such forms are necessary, she argues: 'The time has come for new ways of telling true stories beyond civilizational first principles. Without Man and Nature, all creatures can come back to life.'³⁸

³⁴ 'De paddenstoel als symbool van "leven op de ruïnes van het kapitalisme"', *NRC*, 10 februari 2022, sec. Boeken, <https://www.nrc.nl/nieuws/2022/02/10/de-paddenstoel-als-symbool-van-leven-op-de-ruïnes-van-het-kapitalisme-a4087304>.

³⁵ Tsing, *The Mushroom at the End of the World*, viii.

³⁶ *Ibid.*

³⁷ *Ibid.*, 278.

³⁸ *Ibid.*, vii.

Note that Tsing's way of defusing a standard plot-like teleology through a scattered approach synthesises strategies similar to Pyne's fire narrative and Cronon's open interval. The mushroom is as erratic as Pyne's wildfire, and its heterogenous trade networks are as diverse and open-ended as Cronon's New England. Slightly at odds with her suggestion of novelty in storytelling, Tsing is in fact directly indebted to Cronon, for she builds upon his notion of Second Nature to offer what she calls Third Nature, 'what manages to live despite capitalism.'³⁹

Like Second Nature, Third Nature is an attempt to think beyond nature-culture dichotomies. But whereas Cronon's idea is still heavily reliant on normative views of the economy, and therefore main-stream ecology, Tsing looks further than that. This task is not easy, as modern humans are heavily influenced by polarized "Man and Nature" pictures and their conflicting notions of progress and environmental loss:

To even notice third nature, we must evade assumptions that the future is that singular direction ahead. Like virtual particles in a quantum field, multiple futures pop in and out of possibility; third nature emerges within such temporal polyphony.⁴⁰

In a sense, through her scattered temporal approach, Tsing attempts to instil a similar landscape reading as Hoskins did and other landscape historians are still doing, but at the detached scales of the local and global, the uncomfortable scales at which global environmental change manifests itself.

It should be said that her narrative strategy could also be useful for more regular economic stories. The emission of greenhouse gasses, or other polluting chemicals into the atmosphere, is for the major part done within the core economy, but its influences are diverse. To rehash Tsing's narrative in terms of the core capitalist market, you might trace the production of steel or plastic, from mine or oil well, to shipping container, to shop and finally to dump. And you might integrate the impact these commodities have on people living with their pollution, even including the people who have to cope with rising sea levels as a consequence of CO2 emission. This might seem tenuous, but the reality of climate change is disconnected, unpredictable and open-ended. Cronon's term Second Nature might have been useful to consider Chicago as an ecological actor within its landscape, but to view Chicago on a global scale requires an acknowledgment of its fuzzy impact. Perhaps, we might call it Second-and-a-half Nature.

³⁹ *Ibid.*, viii.

⁴⁰ *Ibid.*

Chapter 7. An ending

Kennen

*Ik hoor de wind, omdat hij door de blaadren sleept,
ik zie de blaadren waar het licht op breekt.
Maar welke blaadren hangen er in stilte en 't donker
en welke oren sluimren waar geen stem tot spreekt.
Ik voel de oude wanhoop van het instrument,
dat tot het uiterste gedreven
niets dan zijn eigen grens herkent.*

M. Vasalis (1954).¹

1. The environment of history

At certain weak moments throughout this project, I became one of Latour's "moderns." I then felt an unwise urge to call whatever I discussed an "intellectual revolution", forged by only a handful of White Men, some of them even Dead White Men. To do so is an obvious fallacy: the changes wrought by environmental historians are part of larger, more complex processes. So, nearing this thesis's end, I am faced with a dilemma not unlike William Cronon's when he wrapped up *Changes in the Land*, choosing between the repressive order of a linearized narrative, and the more complex holistic, but disordered approach, which dissolves anything definitive in a relativist haze.

Cronon's pragmatic solution avoided such commitment, instead contrasting the two approaches to highlight the complex historicity of the New England landscape. First, he summarized the most visible changes along a 'two-point analysis' of beginnings and ends, with the land around the year 1800 heavily damaged and impoverished for the hypothetical western environmentalist, and almost hypothetical indigenous inhabitant. 'And yet', Cronon insisted, 'the problem is not quite so simple.' The two-point analysis makes 'change seem to sudden and uncausal', as if planned systematically by the European colonizer, and Cronon continued to end his book by recalling the combined processes changing the New England landscape.²

My benchmark is different. Unlike the American landscape as perceived by Cronon's peers, the times of history's landscape are not usually measured in terms of radical ruptures. Especially when it comes to ordering times, the craft of history is often seen as a place for

¹ M. Vasalis, 'Kennen', in *Vergezichten En Gezichten* (Amsterdam: Van Oorschot, 1954), 64

² Cronon, *Changes in the Land*, 161.

continuity, stagnancy even, with histories seen as written along modernity's ruler for the past few centuries. This thesis has aimed to counter this notion of stagnancy, favoring one of significant, though still gradual change over the past half a century or so. Nevertheless, let's see what happens when using the Crononian recipe of non-commitment to either an open or closed ending.

In this thesis, the artificial two-point comparison would be between an intentionally vague starting point ('post-war decades') that is much impoverished with respect to the even vaguer endpoint (the present?), with a relatively broad concept of environmental history in the early days having been funneled through a period of tighter disciplinary boundaries before strategically widening again.

In the barren historical landscape we encounter at the beginning, one would find some scholars happily broadcasting deeply dualistic nature-culture views. More often though, histories were constrained to the human only, and therefore to temporal scales and structure of human lives and their societies, measured in epochs. In the rare cases when nature did figure in human history, it was in the background, as a static, vast and external whole, essentially uniform and characterless, except for its local peculiarities in climate and geography. This would be one way of reading Fernand Braudel, as is often done by current posthumanists. Only the cultural landscape would be a place of a shared nature-cultural history, trivially so.

Since then, there have been 'changes in the historical land.' Approaching the present, we find historians comfortably handling questions like: 'Is it possible to write history through the eyes of a crow?'³ Such questions may have been unthinkable earlier in an academic work of history. Yet, now answers can be provided through ecological and historical evidence as well as narrative strategies which would not have been within reach of a post-war historian.

The times of environmental history have diversified in terms of scale, including both the smaller-than-human and larger-than-human. Some scholars, such as Crosby and other Big Historians, begin their histories in the non-human past, and – if publisher's categories can be seen as representative at all – they can even stay there.⁴ Often written very vividly, these works demand an imaginative leap into a distant past, but when we arrive there, the past is strikingly similar to ours, with the same events and rhythms familiar to human histories. It no longer is the soulless place it once was, when Braudel tried to give it some character.

This texturization of a deep past can be seen as a 'historization of nature', the product of new languages and new concepts at a larger scale than ever before, like Crosby's view of a global 'biological revolution'. The initial version of the Columbian Exchange took it for a linear process, but by now, many deep histories also take into account age-old cyclical

³ Zanden e.a., *De ontdekking van de natuur*, 176.

⁴ A booming genre of deep studies is generally positioned on the fringe of (deep) history and popular science/non-fiction, for example: <https://www.penguin.co.uk/books/314443/otherlands-by-halliday-thomas/9780241405741>; <https://www.bloomsbury.com/us/beasts-before-us-9781472983978/>; <https://www.harpercollins.com/products/the-rise-and-fall-of-the-dinosaurs-steve-brusatte?variant=32117226536994> (accessed 10-09-2022).

rhythms, combined into what can best be seen as a helix-shaped temporality. This then is the coveted multiscalar history, key to making sense in the Anthropocene according to Chakrabarty and others.⁵ It is also a departure from strictly modern historiography.

Slightly more radically, we can see a parallel naturalization of history has taken place, specifically an “environmentalization” of history, as historians mirror the diverse times of environments in their books. This change of content has come with a change of form, such as new narrative frameworks which attentively assemble the time of human-natural history without needing transformative breaks, such as open-ended linear narratives as in Cronon’s case, or the manifestly non-linear approaches of Pyne and Tsing. Of course, these changes aren’t limited to narrative, but are accompanied by a more situated and less teleological vocabulary, as well as a skeptical – but fruitful – relation to science. Moreover, in being attentive to the subject’s historicity, the core argumentation of books is less straightforward than the imposed reality of modern history. Histories have become more impressionistic and associative, shifting the burden of interpretation to the reader while borrowing information and imagery from outside of history. So if a “landscape of history” is the cultural set of symbolic practices used to assemble the past, then recent histories of human-natural pasts can better be said to belong to a more neutral and demystified “environment of history”, where encounters with books are heterogenous and can happen more open-mindedly. Just as the change from landscape towards environment gave people a more neutral, universal and abstract way to talk about their surroundings, historians have become less restricted to their own previous cultural landscape.⁶

But of course, ‘the problem is not quite so simple.’ As in Cronon’s case, the somewhat pompous two-point comparison obscures more than it reveals; it is probably wiser to assume an open-ended structure like he does, which is more transparent to the many processes and patterns that have changed our landscape of history into an environment.

To begin, the closed comparison is vulnerable to the paradoxical project of bitter anti-moderns, and less bitter posthumanists, hoping to find deep epistemological breaks. For example, it runs the risk of undervaluing the contributions of historians like Braudel, who dethroned human times in a search for otherwise obscured historical layers, especially socio-economic or natural ones. Moreover, through the same anti-modern lens, one might overlook the persisting relevance (and, perhaps, accuracy) of modernist histories. Consider McEvoy’s account of the California fisheries or biodiversity history. These works are ordered into clean periods precisely to effectively show the efficacy of human actions (or lack thereof). Humanity and nature may very well be part of the same entangled whole. The very fact that humans have appeared to act less symmetrically has often left a substantial modern footprint upon environment, and will likely continue to do so as long as human history is one that can be perceived in terms of periods.

⁵ Tamm and Boldizár Simon, ‘More-Than-Human History’; Chakrabarty, ‘Anthropocene Time’.

⁶ I am drawing on John Lewis Gaddis’ *The Landscape of History*. And continuing the analogy, what is the “wilderness of history?”

Furthermore, the two-point comparison treats environmental historians as if they lived in a vacuum. Yet it is more illuminating to imagine them watching science-fiction, strapping on walking boots or carefully exploring disciplinary boundaries while striving for academic tenure. I have only taken small steps in that direction, which I summarize below, also pointing to potential outlooks for further research into (environmental) historians' temporality which would take the conclusions of this thesis as a starting point, beginning not in a landscape, but in an environment of history.

Firstly, environmental historians are humans after all, and were therefore part of environmental debates which have had a strong temporal character that needs to be taken into account. Or more generally, the ongoing clashes of modernity's progressive ideals with daily reality throughout the twentieth century should be part of any study.⁷ This involves mentioning the impact of *Limits to Growth* once or twice, but preferably also the more subtle, sporadic traces of encounters with alternative temporalities. Admittedly, this is difficult. The best example in this thesis is probably Stephen J. Pyne's reflection in *Fire in America*, in which he explained his inspiration hadn't been drawn from history, but from modular modernist architecture and his looseleaf training manuals as a firefighter. The emphasis on modularity may well be traceable to a type of system-based thinking, vaguely associated with the twentieth century, in a move away from internally coherent frameworks.⁸ In either case, the liberty Pyne clearly felt to look beyond historical boundaries shows that history is and was not a closed stronghold, and we may thus look towards novels and films to understand the origin of temporal arrangements, which have been considerably more diverse than the ones in history.⁹

Secondly, environmental historians are historians, or at least tried hard to be so. Hence, direct influence from other (innovative) historical enterprises can be discerned in some cases, in particular socio-economic histories, with their slower temporalities. For example, Hoskins' landscape history has been claimed to be directly indebted to Braudel's *The Mediterranean*.¹⁰

Perhaps we can even postulate that any "x history" has a fairly unique "x time". It would be a fascinating project to map the diverse temporal constructions found across historical disciplines, including their origins. For example, akin to the emphasis on continuity and long-term trends in social histories, sociological or psychological histories might further 'muddle periodization and conventional historical eras', as the author of a

⁷ Isenberg and Cronon discuss the difficult political context of environmental history, see: 'Historicizing Natural Environments'; William Cronon, 'The Uses of Environmental History'.

⁸ This is, admittedly, tenuous. I borrow the idea from Belgrad's study of ecological thinking: Belgrad, *The Culture of Feedback*. For interesting reflections on the needs for alternative types of storytelling, see the "Afterwords" in: Alun Munslow and Robert A. Rosenstone, *Experiments in Rethinking History* (New York, NY: Routledge, 2004).

⁹ Within this thesis, William Cronon has evidently been a source of inspiration, as well as other historians mentioned here. However, some of the authors of epigraphs, as well as the artists mentioned in Chapter 2, may well have had a detectable influence.

¹⁰ Grove and Damodaran, 'Imperialism, Intellectual Networks, and Environmental Change; Unearthing the Origins and Evolution of Global Environmental History', 35.

recent *Sensory History Manifesto* claimed.¹¹ If a past on one side of a supposed revolution looked, smelled and felt the same as on the other side, then the discontinuity of revolution is challenged, at least on an individual level. In line with a broader ‘memory turn’, studies with a strong oral historical content have often achieved a similar flattening of history, by showing the (often contradictory) diversity of experiences of people throughout conflict. Moreover, these works often show the lingering impact of conflicts throughout people’s lives, revealing how people can be captured in a single moment, or continue to live in ‘secondhand time’, which undermines the idea that a conflict is simply finished once the treaty is signed.¹² This is just the tip of the iceberg, the historical arrow of time points in many ways.

Finally, environmental history should be seen as a node in a larger network of earth, natural and social sciences, which is generally done only sparingly in surveys of the field, tending to focus on their historical roots instead. The post-war decades in particular saw a huge proliferation of interdisciplinary cross-over, and it is likely more productive to view environmental history within this fuzzy network than as a separate discipline.

Studies of environmental historians’ relations to ecology and earth sciences do run the risk of a triumphant scientist undertone. I hope this thesis has shown that instead, Alfred Crosby’s statement that historians ‘must lope along where scientists fear to tread’ has continued to bear truth (and *vice versa*).¹³ For example, only three years before Cronon openly questioned the idealization of wilderness for a general public and audience of historians, geographer William Denevan had published a similar radical article on ‘the pristine myth’ aimed at his American colleagues, receiving similar backlash as Cronon.¹⁴

Two final points about potential outlooks for further research, which connect with the previously mentioned points. Firstly, a project like mine should improve the relation to the environmental humanities. For the most part, I have taken ideas from radical post-anthropocentric history as a benchmark, and though I side with its mission in general, the categorical rejection of modernity probably does more harm than good. My thesis overlaps more with environmental humanities, particularly the projects researching the role and efficacy of ecological narratives within environmental debates.¹⁵ Secondly, it would be

¹¹ Mark M. Smith, *A Sensory History Manifesto*, Perspectives on Sensory History (University Park, Pennsylvania: The Pennsylvania State University Press, 2021), 66.

¹² Selma Leydesdorff et al., ‘Introduction: Trauma and Life Stories’, in *Trauma and Life Stories. International Perspectives*, ed. Selma Leyd, Kim Lacy Rogers, and Graham Dawson, Routledge Studies in Memory and Narrative (New York: Routledge, 1999), 1; Svetlana Aleksievich, *Secondhand Time: The Last of the Soviets*, First U.S. Edition (New York: Random House, 2016).

¹³ Crosby, *The Columbian Exchange*, 169.

¹⁴ William M. Denevan, ‘The Pristine Myth: The Landscape of the Americas in 1492’, *Annals of the Association of American Geographers* 82, no. 3 (1992): 369–85; William M. Denevan, ‘The “Pristine Myth” Revisited’, *Geographical Review* 101, no. 4 (2011): 577 – 587.

¹⁵ For example: Erin James and Eric Morel, eds., *Environment and Narrative: New Directions in Econarratology*, Theory and Interpretation of Narrative (Columbus: The Ohio State University Press, 2020). Or consider the following Utrecht University projects: ‘Liternatuur | De klimaatcrisis in Nederlandse literatuur’, Utrecht University, accessed 15 September 2022, <https://liternatuur.sites.uu.nl>; ‘Green Media Studies’, Utrecht University, accessed 15 September 2022, <https://greenmedia.sites.uu.nl>.

fascinating to extend the methodology of this research into non-western contexts. I have been hesitant to do so, as I felt the current project was ambitious enough already, but also because many contemporary assessments continue to mythologize non-western societies, particularly indigenous ones, and I was afraid I wouldn't be able to see through this continuing 'pristine myth'.¹⁶ I now believe that for the connection with environmental humanities, as well as non-western societies, my structuralist reading could offer a basis for avoiding common pitfalls, staying aware of the biases that underscore current eco-narratives as well as the repression and ignorance inherent to the mythological views of nature one will undoubtedly find in indigenous societies.

2. No reflection on mimesis

This closing chapter started with a comparison between Cronon's book and my thesis.¹⁷ This is not accidental. Even though our topics are vastly different, I claim our approaches share a fundamental assumption about the mechanisms of changes in our respective landscapes, which we both tried to mimic in our narratives, as well as a similar assumption about our historiographic context (mine being imaginary, of course).

The metaphor of mimicking has entered into this thesis at several points to describe how historians seemed to copy the temporality of their subject within epistemological structures, sometimes even with an ontological commitment, as in Hoskins' and Tsing's cases. However, rather than teasing out a difficult conceptualization about this sense of mimicking, I think it is more productive to see it in action in a very different context. So let's move on.

3. Some reflections on reflections

This thesis collects ideas in a fairly structured fashion, but I never sat down, pencil in hand, to design that structure. My endless mulling over architecture dragged on more organically, perhaps even ecologically, with ideas harvested and developed along with the awkward structure in which they would be fit eventually.

And so, throughout this project, I found myself perpetually caught between two opposing poles. Or at least, they often seemed antipodal. One was to write in traditional historicist fashion. At one point, when I got myself entangled in my own thoughts trying too hard to draw connections between scattered, unconnected ideas, I was helped by a wise recommendation to 'release my inner Leopold von Ranke', prompting me for the very first

¹⁶ For example, 'Ecological wisdom' is commonly mythologized: Olga V. Zakharova et al., 'Environmental Education: Ecological Wisdom of Indigenous Peoples in Western Siberia', *Sustainability* 13, no. 7 (5 April 2021): 4040, <https://doi.org/10.3390/su13074040>; Nancy J. Turner, *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous Peoples of Northwestern North America* (McGill-Queen's University Press, c2014), <https://hdl.handle.net/2027/heb33492.0001.001>.

¹⁷ In fact, as I was very late to see myself, the technical opening chapters happen to be very similar as well, unintentionally so.

time to draw an elementary form of the two-point comparison above. But such a linear approach of figuring out how “things actually were” had not just been beyond my capabilities; I had resisted it quietly. Without realizing it at the moment, I had repressed the very idea of continuity between the beginning of my narrative and its end, pulled on by the opposing pole of anti-modern, anti-capitalist or even ‘woke’ critique, prevalent in virtually any vaguely activist faction I happen to be occasionally exposed to, as I suppose is inevitable in a university trying hard to be ‘inclUUsive’. Writing historicistically felt like casting a vote for the VVD: a flat out denial of the repressive action of modernity. But of course, returning to the paradox of anti-modernity, discontinuity implies distance. So in thought, I came full circle, back to the Ranke I didn’t want to be.

To break free from this circle, the resulting thesis is a hybrid between the linear and the non-linear, the particular and universal, the repression of order and a postmodern mist, reaching for, but never quite delivering, a structure similar to Cronon’s or Tsing’s. Tantalizingly liberal, but highly complex, their structures, as well as the accompanying words and ideas, were obviously beyond my reach. Undoubtedly, this is due to my lack of hard competence and soft intuition, but likely also due to a more general trend of conservative reluctance to view alternatives to conventional storytelling as constructive for telling ‘effective stories beyond civilizational first principles’, to paraphrase Tsing.¹⁸

That is not to say that all historians of science are caught up in nineteenth-century positivist styles, far from it, although prevailing retreats into the static microhistorical have hardly been instructive. My project, from the start, has aimed at something more diachronic.¹⁹ Although relatively scarce, I have still had plenty of histories to draw inspiration from. Among many others, this includes Rebecca Skloot’s *The Immortal Life of Henrietta Lacks*, part history of medicine, part memoir, part detective. Switching between objective and subjective narrative positions, Skloot parallelly reveals a history of medical ethics and a biography of her subject, an African American woman who unknowingly donated tumor cells that ended up living a separate life in labs throughout the world. The highly personal detective/memoir parts of Skloot’s book show her own distance to the Lacks’ family, revealing the persistent social inequality which had caused the mistreatment of the family (and other African Americans) by medics in the first place.²⁰ Or consider James Secord’s *Victorian Sensation*, an ingenious narrative about Victorian reactions to *Vestiges*, a book on natural history, that penetrated deeply into lower classes. Though rhetorically naming *Vestiges* a ‘turning point’, Secord elegantly sketches a picture of heterogenous local reactions at various layers of society, each more or less correlated and panning out at various temporal scales.²¹

¹⁸ Effective rather than true, as I don’t share her commitment to history as truth-telling. Tsing, *The Mushroom at the End of the World*, vii.

¹⁹ I do hope this thesis has shown that divisions between micro, ‘normal’ and microhistory are considerably more complex than often taken to be, for example because Cronon’s *Changes in the Land* can be considered a microhistory, though one at a massive scale.

²⁰ Perhaps, some of the reflections here are partially indebted to Skloot’s. Rebecca Skloot, *The Immortal Life of Henrietta Lacks*, 1st pbk. ed (New York: Broadway Paperbacks, 2011).

²¹ James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation*, Paperback ed (Chicago, Ill.: Univ. of Chicago Press, 2003), 2.

The sophisticated narrative therefore has many entry and exit points on, among many others, political, religious and publishing histories. It also actively combats teleology, for example by withholding the names of would-be-famous actors to approach their diverse reactions more neutrally, claiming that ‘books do not influence people in any determinate way. Books have no single meaning, no coercive “impact.”’²²

And yet, much of this ingenuity often evaporates in conceptualizations of the role of narrative in history, which tend to isolate the historical world imagined through the narrative from the printed story itself.²³ This is what happened recently in a volume in which contributors ‘experimented’ with rethinking history through alternative storytelling.²⁴ In my view, experimenting with stories that are untied from history is like viewing an innovative particle accelerator as an experiment in rethinking particle physics, forgetting the body of theory behind the accelerator. In fact, even Secord made a similar separation of story and history in an influential paper in *Isis*, which effectively laid out the blueprint for his earlier book, as it reviewed recent trends to understand ‘science in practice’ rather than as a rectilinear trade in truth. But viewing ‘knowledge in transit’ requires new strategies, Secord argued, and therefore ‘the narrative frameworks used by historians of science need to come to terms with diversity by understanding science as a form of communication.’²⁵

Though I agree with Secord on many points, I part ways with his implicit suggestion that narrative limps behind historical imagination. Despite Secord’s own rejection of teleology in *Victorian Sensation*, his conceptual position to narrative as deterministic is strikingly similar to Cronon’s, which we encountered in Chapter 3. Secord states: ‘All narrative history is a succession of origin events, as any narrative is dominated by its end and beginning. In telling stories, we are inevitably drawn toward a teleology.’²⁶ He follows up with a number of valuable suggestions about the consequences of his ‘science in practice’ approach for historical conceptualization and methodology, but how this translates into new ‘narrative frameworks’ remains unclear. In my view, shedding the burden of narrative determinism can improve an understanding of the ways in which alternatively temporalized pasts may be assembled beyond the modern teleological, and allows narrative to be viewed as an essential component of historical intellectual frameworks, along with vocabulary and several other temporal markers.

To see how this could work, it is interesting to draw a parallel between the times of environmental history studied throughout this thesis and the times of intellectual histories, which have gone through remarkably similar changes in the period covered here.²⁷ As Secord recounts, current histories of science are still underscored by lingering traces of antipositivist

²² Secord, *Victorian Sensation*, 334.

²³ I suppose these separations can be seen as attempts at saving a basis for objectivity or narrative realism.

²⁴ Munslow and Rosenstone, *Experiments in Rethinking History*.

²⁵ James A. Secord, ‘Knowledge in Transit’, *Isis* 95, no. 4 (2004): 654, <https://doi.org/10.1086/430657>.

²⁶ *Ibid.*, 663. In fact, Secord’s message throughout the entire article is highly similar to Cronon’s, though aimed at different audiences and less conservatively concerned with objectivity.

²⁷ All of this can be generalized to other forms of history, though I think in its diversity, environmental history is better than most.

or constructivist histories. To return to the claim that each history has its own time, these histories evidently used the straightforward (modern times), measured in revolutions and expressed in accordingly well-defined temporal structures, all within one internally coherent intellectual framework of ontology, epistemology and methodology (thus reflecting the antipositivist faith in such coherence). This then is remarkably similar to Cronon's account of dualistic environmental historians, and his own storied cosmology.

Closer to the present, Secord's design of a field concerned with 'knowledge in transit' evidently faces more complex and diverse times than antipositivist ones, having to take into account the rhythms and speeds of the knowledge economy, with its periodically published articles, as well as the even more difficult transfer of knowledge beyond printed journals.²⁸ This task in assembling diverse times is not unlike the one environmental historians faced.

We might even draw a not-so-tenuous parallel between environmental ecology and knowledge ecology, even if there are undeniably differences. The job of environmental historians to view their topics from a neutral standpoint has likely been easier, as groups of scientists are harder to view from a neutral, less culturally laden standpoint than groups of animals and plants. However, if the open-ended design of the first part of this concluding chapter, modelled after Cronon's, has been remotely effective, I hope it shows that in some cases we might just as well view scientists as the inhabitants of an intellectual environment, following ecological rules. Through this lens, I believe we are better equipped to write histories of knowledge liberated from dogmas and mystifications, just like environmental historians when they looked upon a neutral past.

Rather than view alternative types of storytelling as 'experiments', I think we should accept unconventional narratives – e.g. open ended, non-linear, slowly evolutionary or with a strong authorial presence – as key (if not essential) to effectively representing unconventional pasts. But, no matter the postmodern rejection of linear plots, a highly conventional modern narrative can equally be justified from an environmental standpoint, depending on the knowledge ecology of the case study at hand. If humans behave anything like fish populations, we might just as well measure their time as revolutionary, or even paradigmatic change.

²⁸ *Ibid.*, 663.

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Utrecht, 16 September 02022

*‘Er is geen einde en geen begin
aan deze tocht, geen toekomst, geen verleden,
alleen dit wonderlijk gespleten lange heden.’*

¹ Citatie-incest, mocht deze scriptie ooit het licht zien: Jurriaan Wouters, ‘Exotic Phases in Strongly Correlated Parafermion Chains’: (Utrecht University, 2021), <https://doi.org/10.33540/828>, 203.

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