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SECOND EDITION

EDITED BY J.R. McNeill and Erin Stewart Mauldin

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A Companion to Global Environmental History

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A COMPANION TO GLOBAL ENVIRONMENTAL HISTORY

Second Edition

Edited by

J. R. McNeill and Erin Stewart Mauldin

WILEY Blackwell

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When editors are rash enough to agree to revisit a decade-old book that depends on updating original work from an international roster of authors, co-authors, and brand-new contributors, the probability that something will go badly wrong is considerable. Our authors defied the odds, writing their chapters promptly, answering our queries swiftly, and tolerating tweaks to their pearly prose with equanimity. We thank them for that.

> John R. McNeill Erin Stewart Mauldin

Global Environmental History: An Updated Introduction

J. R. MCNEILL AND ERIN STEWART MAULDIN

This second, and much revised, edition of the *Companion to Global Environmental History* appears more than a decade after the original was published in 2012. That is a long time in the history of a young scholarly field. Since the 1970s, environmental history has evolved into a self-conscious and self-aware sub-discipline that boasts journals, university programs, and international organizations devoted to its practice and promotion. Global environmental history, however, is much younger. Although a dynamic field with a steadily increasing number of practitioners, global environmental history remains, as yet, less clear in its structure, shape, and place within the historical profession.

This volume aims to orient readers to the fast-growing arena of scholarly inquiry known as global, or world, environmental history. It is a collection of essays by 37 scholars from all six inhabited continents, some of whom were instrumental in the first establishment of environmental history, while others of whom are shaping the field's latest twists and turns. The *Companion to Global Environmental History* surveys past developments in the field, current contours of scholarship, and possible approaches for the future. It is intended to be useful not only to people who are coming to environmental history for the first time – serving as the equivalent of a road map to the field – but also to people who have long labored in one province of environmental history, and, for whatever reason, seek to broaden their horizons and begin to develop comparative perspectives – or deepen their existing ones.

What Is Environmental History?

Like every other subset of history, environmental history represents different things to different people. Our preferred definition of the field is the study of the relationship between human societies and the rest of nature on which they depended. Humankind has always been a part of nature, albeit a distinctive part. While the natural world has shaped and conditioned the human experience, over time, humans have made increasingly far-reaching alterations to their surroundings. Environmental history recognizes that the natural world is not merely the backdrop to human events, but evolves in its own right, both of its own accord and in response to human actions. Nature is now both natural and cultural, at least in most places on Earth. Indeed human influence upon nature has attained such proportions that some scholars maintain life on Earth has entered a new geological epoch, the Anthropocene. Increasing use of this still controversial term signifies growing awareness in scientific circles of the burgeoning human environmental impact.¹ The vast scope of environmental history invites many and varied approaches. There are, we think, three chief areas of inquiry, which of course overlap and have no firm boundaries. First is the study of material environmental history, the stories of human involvement with forests and frogs, with cholera and chlorofluorocarbons. This entails the examination of human impact on the physical, biological, and chemical environment as well as nature's influence upon human affairs, each of which is always in flux and always affecting the other. This form of environmental history puts human history in a fuller context, that of the Earth and life on Earth, and recognizes that human events are part of a larger story in which humans are not the only actors. A full extension of this principle is the so-called Big History pioneered by David Christian and Fred Spier,² which places humans into the unfolding history of the universe and finds recurrent patterns over the largest timescales. In practice, however, most of the environmental history written in the material vein stresses the economic and technological side of human actions and thus concentrates on the last 200 years when industrialization (among other forces) greatly enhanced humankind's power to alter environments.

Second is a form of cultural and intellectual history. It concerns what humans have thought, believed, and written that treats relationships between society and nature. It emphasizes representations and images of nature in art, literature, religion, and oral traditions, how these have changed, and what they reveal about the societies that produced them.³ The great majority of cultural environmental history is drawn from published texts, as with intellectual history, and often treats the works of influential (and sometimes not-so-influential) authors from Lucretius and Mencius to St. Francis to Mohandas K. Gandhi. This sort of environmental history tends to focus on individual thinkers, but it can also extend to the study of popular environmental history, however, has been the relative impact of various religio-cultural traditions on the natural world. This scholarship evaluates the texts and practices of Judeo-Christian, Islamic, East Asian, and indigenous traditions, attempting to determine their effects on the environment.⁴

The third main form is political and policy-related environmental history. This concerns the history of deliberate human efforts to regulate the relationship between society and nature, and among social groups in matters concerning nature. Although there are early examples of soil conservation, air-pollution control, and royal efforts to protect charismatic animals for a monarch's hunting pleasure, usually policy-related environmental history extends back only to the late nineteenth century. Only in the era since 1880 have states and societies mounted systematic efforts to regulate interactions with the environment generally. Between 1880 and 1965, these efforts were normally spasmodic and often modest in their impacts, so much of this sort of environmental history deals with the decades since 1965, when both states and explicitly environmental organizations grew more determined and effective in their interventions. Political and policy environmental history is the approach that most easily dovetails with mainstream history for it often uses the nation-state as its unit of analysis. Other types of environmental history tend to ignore political boundaries.

In practice, environmental history is all this and much more. More than most varieties of history, environmental history is an interdisciplinary project. Many scholars in the field trained as archeologists, geographers, or historical ecologists. In addition to the customary published and archival texts of the standard historian, environmental historians routinely use the findings culled from bio-archives (such as pollen deposits which can tell us about former vegetation patterns) and geo-archives (such as soil profiles that can tell us about past land-use practices). The subject matter of environmental history is often much the same as that in historical geography or historical ecology, although the choice of sources emphasized normally differs. An illustration is the burgeoning field of climate history, which is pursued by scholars from at least half a dozen disciplines, including text-based historians. Textual historians have found

useful records for climate history going back many centuries, for example, the dates of grape harvests in European vineyards. Compiling and comparing these dates over centuries allows historians to draw strong inferences about past warming and cooling trends.⁵

Global Environmental History

Global environmental history has a compelling logic but presents a daunting aspect. Many ecological processes are global in scope, such as climate change or sea-level rise, and many others are found here and there around the world, such as deforestation and urban air pollution. Several of the cultural trends concerning the environment have been nearly global too, most obviously the post-1960s expression of ecological anxiety, although of course it finds different forms in different cultures.⁶ But global-scale environmental history, like global and world history in general, is built upon the foundation of local work and regional surveys. No single historian can master the details of soil history or the history of water pollution around the world, just as no one can fully master the global history of wages and prices or of women's movements. All global and world history presents this problem, and for many historians this alone suffices to make the venture illegitimate.

A moment's reflection, however, should redeem the ambition of global-scale history. Something is gained and something lost with any choice of scale. If historians required true mastery of their subjects, they could aim no more broadly than autobiography. There is no purely intellectual reason to prefer microhistory to macrohistory, whether environmental or otherwise. But it remains true that, practically speaking, bringing coherence to the subject of the global history of air pollution is much more difficult than, say, to the history of the killer fog of London in December 1952. Global environmental history, then, is often a process of stitching together scholarship from multiple geographic scales and perspectives to craft a narrative or an analysis of global ecological change.

For decades the only global environmental history syntheses came from authors who were not professional historians, and therefore less inhibited by their training and the anti-global expectations of the historical profession. British geographers and a former civil servant of the United Kingdom wrote the first notable general surveys, the former in sober style and the latter with the panache of a muckraking journalist.⁷ Sociologists too joined the fray.⁸ Eventually natural scientists took aim at global historical treatments of subjects such as nitrogen and soil.⁹ A multidisciplinary magnum opus from 1990, B. L. Turner et al.'s *The Earth as Transformed by Human Action*, helped spur historians to try their hand at global environmental history.¹⁰

Professional historians began by taking slices of the whole, such as the books on global fire history by Stephen Pyne, or environmentalism by Ramachandra Guha.¹¹ Pyne's work, which grew out of his earlier studies of fire in American history, sought to discuss every aspect of the human relationship with fire, from cooking and the physiology of digestion to the cultural perceptions of wildfires. Guha's short treatise on modern environmentalism showed the contrasts between the social movements that go by that name in, above all, India and the US. Joachim Radkau was perhaps the first to bring the sensibilities of the historian to general global-scale environmental history in his *Natur und Macht: Eine Weltgeschichte der Umwelt*.¹² His was not a survey aiming at worldwide coverage, but a sprawling series of soundings and reflections on everything from animal domestication to contemporary tourism in the Himalaya. It reads a bit like Arnold Toynbee's *A Study of History* with its bold comparisons and juxtapositions across time and space. Unlike Toynbee, Radkau was reluctant to offer grand pronouncements, preferring to honor historians' traditional respect for the particularities of different times and places.¹³

A small squadron of professional historians brought out global-scale environmental histories of one sort or another around the same time as Radkau. Brief surveys, apparently intended for classroom use, poured forth from Europe and the United States.¹⁴ A pair of longer studies took on slices of time that, their authors claimed, exhibited some coherence: John F. Richards surveyed the early modern centuries so strongly affected by European expansion, and J. R. McNeill portrayed the twentieth century as an era of unprecedentedly tumultuous environmental change.¹⁵ Still others presented thematic slices of global environmental history, penning accounts of warfare, deforestation, malaria, or the profit motive over several millennia.¹⁶ Wide-ranging anthologies added to the sudden outpouring – and sidestepped the main limitation of global history, the inability of any single author to know enough.¹⁷ The British Empire, on which the sun famously never set, provided a framework that added coherence to global environmental history as shown in the overview by William Beinart and Lotte Hughes.¹⁸ To date no one has chosen to follow their example with respect to any other modern empires. However, imperialism more generally served as the occasion for one of environmental history's foundational texts, Alfred W. Crosby's Ecological Imperialism, which, if it isn't global environmental history, surely comes very close to it. Crosby sought to explain the successes and failures of European imperial ventures from the Crusades and Greenland Norse onward in environmental terms. And for modern imperialism, Corey Ross recently offered panoptic, multi-imperial perspectives.¹⁹

So global environmental history has come a long way in a brief time. Lately, general overviews have appeared at a quickened pace and one should not expect that to slow.²⁰ The persistent presence of environmental issues in modern life has made environmental history a permanent fixture of historiography rather than a passing fancy. The growing salience of climate concerns, deforestation, water shortages, and loss of biodiversity has convinced some historians, previously working far from environmental history, that it is no longer appropriate to write history without taking the environment, especially climate change, into account.²¹ Furthermore, global-scale environmental history has benefited from the rise of world or global history, an intellectual response to the recent surge of globalization and, in the US at least, a practical response to political pressures upon school curricula.²² But, as always, further opportunities abound. Some day someone will write a global environmental history of railroads, of mining, of cattle, of the oceans, of computers, of religion, of odors, of things as yet unimagined.

The Companion

The second edition of this volume is organized much like the first. Although there are countless ways in which one could approach the endeavor of global environmental history, this volume combines temporal, geographic, and thematic sections. With contributions from an international roster of historians, the content of the chapters that follow is as diverse as the approaches to environmental history. Some authors emphasize natural and cultural history, while others focus on political and economic developments. Some chapters are surveys, others are historiographical, and many are a mix of the two.

As with the first edition, each author was given the freedom to update his or her chapter as the subject required and almost every chapter from the original volume has revisions or new material. There are still occasional overlaps in the subjects under discussion. For instance, the impact of the first human migrations into the Americas appears in four chapters, although the authors approach the subject with differing purposes and with sometimes contrasting conclusions. Readers will also notice that some subjects recur with regularity throughout the *Companion*, such as agriculture, industrialization, climate, and biological exchanges. That is as it should be for these are central themes for environmental history. In this volume, you will find regions, themes, and time periods not well represented in the historiography, new evidence for old debates, and inventive new ways of approaching the practice of environmental history.

The *Companion* is split into four parts. Part I, entitled "Times," shows how the issues and trajectories of the relationship between society and nature have evolved over time, and how they differ from one period to the next. Authors cover major milestones in human history, helping readers develop a sense of the deep past so often neglected in environmental, and indeed in all, history. Chapters in this section discuss the latest findings in the study of human origins, the methods by which environmental historians and other scholars understand ancient landscapes and how environmental factors contributed to the rise and fall of human societies over time. Because our understanding of the human story is so different from that of a decade ago when the first edition of the *Companion* appeared, several chapters required significant updates. The scope of this section is vast, and the authors' work demonstrates how the coevolution of humans and nature over a very *longue durée* can illuminate not only current environmental issues but also political and economic ones.

The next section, Part II, is entitled "Places," and it is here that careful readers will see the most significant changes between the first edition of this volume and the second. This part is a series of regional or national narratives and historiographies that show how the pieces of the global puzzle fit together. Place, although it can be defined and construed in many ways and at many scales, is usually a central concept for environmental history. In practice, most environmental history is written about specific places, some as small as a few farms, others as large as a continent. We felt that it is important to include the regional and local, for they are the foundation of the global. Many areas around the world have experienced similar historical processes that drive ecological change - biological invasions, colonialism, industrialization, conservation movements - and this section allows readers to see how geographical variations in climate, terrain, and availability of natural resources, as well as cultural patterns, political frameworks, and economic structures, have influenced the map of environmental change. Not every country or region is represented, but readers will note brand-new chapters on Africa, China, South Asia, and central Eurasia. In chapters that cover areas of the globe that have rich historiographies, such as the United States, authors have overhauled their work from the original volume to reflect the fast-growing literature of the last decade. Other chapters, however, have been updated more lightly. The literature on the Soviet Union, for instance, has not seen great change since the first edition was published, but the war in Ukraine will more than likely transform it in the future. The chapters from the first edition that, at the time, represented the first surveys of areas such as the Arctic and the Middle East, remain regions of the globe that have yet to receive their due from environmental historians despite the intervening years.

The third part of the *Companion* moves away from chronological and geographical organization. Here, each author examines one thematic issue across the globe and across time. There are chapters which outline the human relationship to natural elements, such as forests, rivers, and oceans, as well as chapters on how the evolution of technology, warfare, and industrial processes altered the world's environment. Authors focus partly on the biogeophysical changes themselves, but also upon the social, economic, and political forces behind them. Some chapters present familiar themes, such as fishing or agriculture, but use an expanded temporal or geographical scope to present readers with new, global perspectives. Other chapters, such as those on grasslands and evolution, challenge readers with unfamiliar comparisons and unfettered imagination. There is a new chapter on European urban environmental history, and substantial updates to chapters on pressing issues such as climate change.

The final section of the *Companion*, Part IV, surveys different types of environmental thought and action around the world, giving readers a sense of the variety of cultural, intellectual, and political engagements with the environment in modern times. While the first two parts have significant chronological depth, Parts III and IV exhibit a strong bias toward the modern period (since 1500 CE). This is partly a reflection of the current literature in the field

and partly due to the practicalities of scholarship in global environmental history. This section contains two new chapters on global environmental governance and environmentalism in Europe, joining the original chapters on environmentalism in the world's fastest-growing economies, Brazil and China, and explorations of major themes in environmental thought.

Global environmental history is a fast-moving field with porous boundaries and a wide range of interdisciplinary connections. The chapters in this volume are by no means comprehensive and do not provide complete coverage of all themes and all places, but the chapters help provide an understanding of how people actually work in environmental history and reflect the major approaches within the field's scholarship as they have evolved since the first edition. This *Companion* aims to offer a guide to environmental history scholarship written in, and for, our ecologically dynamic and globalizing times, and we hope that readers continue to find something illuminating and entrancing in its pages.

Notes

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Part I

Times

CHAPTER ONE

Global Environmental History: The First 300,000 Years

J. R. MCNEILL

If, as scholars of human evolution suppose, our species emerged about 300,000 years ago, then roughly 99 percent of human history took place before the first cities and civilization. This chapter will briefly explore global environmental history over that very *longue durée*. It will sketch some of the ways in which the changing earthly environment affected human affairs, including perhaps almost ending them entirely about 73,000 years ago, and will outline some of the ways in which human actions changed the environment. By and large, in the millennia before farming, environmental change affected human affairs more than human affairs affected the environment. However, with the transition to agriculture about 10,000 years ago, that began to change fundamentally: our numbers and technologies gradually attained new levels so that, when combined with our long-standing heedlessness, we became an increasingly important force in shaping the global environment.

The Environment Shapes Paleolithic Humans and Human Affairs

About 7 million years ago, our ancestors diverged, genetically speaking, from other apes. After another couple of million years, later ancestors began to walk upright (bipedalism) and develop big brains all out of proportion to their bodies. Climate change, according to prevailing interpretations, likely played a role in these fateful departures. In East and Southern Africa, where it likely happened, drier conditions some 6–8 million years ago reduced the domain of forest and encouraged the spread of grassy savanna. This environment rewarded upright posture and bipedalism, which allowed hominins (the preferred term for humans plus their bipedal ancestors) to see longer distances and to move faster in open terrain. Standing upright also made it easier to dissipate heat under the tropical sun. East African climate also apparently became more unstable, with rapidly alternating wet and dry phases. This instability, the thinking goes, rewarded flexible behavior and thereby bigger brains. So, if this line of reasoning is correct, climate change helped shape the human animal in basic ways.¹

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Climate change continues to influence human affairs. Beginning about 3 million years ago, the Earth entered a period – in which we still live – of alternating glacial and interglacial phases. In our African homeland, this oscillating climate rhythm appeared mainly as wetter and drier phases, because it was never so cold as to encourage glaciation (outside of the highest mountains). When hominins left Africa, which some did more than a million years ago, they had to adjust to ice ages that in Eurasia involved much colder temperatures, as well as a drier, windier, and more unstable climate.

Migration

Our own species, *Homo sapiens sapiens*, evolved within Africa by 300,000 BP. A few intrepid groups walked out of Africa, perhaps around 100,000 years ago. As they crossed to Arabia and Southwest Asia, they too encountered colder climate. Their migrations coincided with the early millennia of a new cold phase, an ice age that lasted from about 110,000 to 12,000 years ago. This latest ice age was not only much colder and drier than the modern climate, but in most parts of the world, it was also more unstable. For decades or centuries, comparatively sudden cooling or warming might occur, in swings of average temperatures of 5–10 degrees Celsius (9–18 degrees Fahrenheit). The slender evidence suggests that these swings were smaller in Africa than on other continents. Elsewhere, the incentives to migrate, either to avoid the worst of the cold and drought or to take advantage of warming and moisture, were often strong. Staying put for centuries was usually a poor gamble because the climate was too unstable.

The best aspect of ice-age conditions (for humans) was that although ice sheets covered twice as much land as they do today, the ice locked up water, keeping it from the oceans, resulting in lower sea levels. With sea level as much as 130 meters (~425 feet) lower than today's, terrestrial species had about 25 million more square kilometers of land to work with – the equivalent of an additional continent the size of North America. It was possible to walk across most of Indonesia, from Australia to New Guinea, from Korea to Japan, from Britain to France, and from Siberia to Alaska. The unfortunate part of this for historians and archeologists is that probably most people lived most of their lives in these zones, helping themselves to seafood found along the ancient shores, and all archaeological remains of their existence vanished beneath the waves when sea levels rose sharply around 15,000–8000 years ago.

The most challenging moment of the last ice age came around 74,000–70,000 years ago when a giant volcanic eruption (of Mt. Toba, on the island of Sumatra in what is now Indonesia) spewed enough dust and ash into the skies to block sunlight and lower temperatures by 3.5 degrees Celsius for a few years. Impacts varied greatly from place to place. Toba was the biggest volcanic eruption in the last 2.5 million years, far larger than Samalas (1257–8) or Tambora (1815), as measured by the quantity of tephra – rock, magma, and other material – thrown heavenward. Ash fell from the sky as far away as Arabia and the east coast of Africa. In some places in India, the resulting tephra layer was, and is, six meters thick!

The impact of the Toba catastrophe remains controversial, but it is plausible that it played havoc with plant and animal life. The fossil pollen record shows collapses of vegetation in many parts of Asia, leaving animal species with little to munch on. DNA evidence suggests that several animals, including tigers and orangutans, suffered dramatic reductions in populations at about this time. Scientists once associated the Toba eruption with a hypothesized sharp reduction in human numbers, but later genomic work makes this interpretation seem unlikely. However, Toba's impacts probably included acute damage to human health resulting from tropical stratospheric ozone depletion. The sulfur ejected from the volcano inhibited ozone formation, leaving life on earth exposed to much greater quantities of ultraviolet

radiation from the sun for a year or more. This is also the time, incidentally, when (inferred from DNA evidence in lice) humans began to wear clothing, perhaps favored by colder temperatures and better health among those whose skins received less UV radiation.²

The Toba event was of unique intensity in human experience, but the ice age contained numerous cold spells and severe droughts. Over the past 110,000 years, modern humans evolved in a time of generally cool, dry, and erratic global climate, and they colonized Eurasia during the colder phases of the last ice age, a circumstance that surely rewarded innovation, learning, and communication in any species. Adverse climate conditions may have contributed to increased cultural dexterity.

From their African homelands, human populations continued to migrate into Eurasia. Once again, lower sea levels, thanks to the buildup of ice, helped. Humans reached Australia and New Guinea, at the time united as a single continent, perhaps as early as 60,000 years ago and no later than 40,000 BP (=before the present). Getting there required a sea journey of at least 100 kilometers (~60 miles). This voyage implies a considerable technological and logistical competence, as well as a high tolerance for risk: the first Australians were surely a plucky lot. Other modern humans headed north into what is now China and Japan by about 30,000 BP. Distant cousins entered Europe around 40,000 years ago, to the misfortune of the indigenous Neanderthals. These new Europeans, according to genetic evidence, are the ancestors of 75-85 percent of contemporary Europeans. They soon encountered the depths of the last ice age and – not unlike their more affluent descendants today – headed for Spain and the south of France in search of balmier climes. Meanwhile, other humans walked into the chilly expanses of Siberia, attracted by the abundance of large, tasty, naive mammals such as mammoths. At this time, some 40,000–30,000 years ago, the global population was probably only a few hundred thousand, about the same number of people as live today in Des Moines, Lubbock, or Boise (or Nottingham, Coventry, Canberra, or Christchurch). It was an uncrowded world.

Nevertheless, some people moved further afield. Epic migrations brought people to the Americas, possibly as early as 25,000 years ago, certainly by 13,000 BP. They crossed from Siberia to Alaska, at that time a broad land corridor because of lower sea levels. They could have come by boat or they might have walked. Once in the Americas they apparently spread out quickly, reaching Chile no later than 12,000 years ago. The archaeological, linguistic, and DNA evidence concerning this discovery of America is not consistent, so arguments rage about its timing, about the size of the founding population, and about whether or not it came all at once or in two or three separate waves. It does seem that the first Americans are most closely related to people of southern Siberia, although rival interpretations maintain that their cousins were from what is now Korea and North China.

These long, slow migrations out of Africa and throughout the world, no doubt, contained many setbacks. Groups guessed wrong and found themselves in deserts from time to time. Others attempted what they thought was a short sea voyage and never saw land again. The Mt. Toba deep freeze might have killed off a considerable proportion of people not living in warm places. But slowly, in fits and starts, humankind colonized the globe.³

Domestication and Farming

The deep cold of Siberia in these millennia contributed to another momentous development: the first domestication. Humankind's first friend was the dog. Dogs evolved from wolves over thousands of years. Just how, when, and where this first happened is unclear, but the latest (genetic) evidence suggests that it occurred in Siberia around 30,000–23,000 BP.

The dog-human symbiosis was a mutually profitable partnership. Dogs provided people with hunting help (compensating for our poor sense of smell), with an early-warning system

against attackers, and with loyal companionship including furry warmth on cold nights. In dire circumstances, people could also eat their dogs. People provided dogs with food (or hunting help, as the dogs might see it), and sometimes protection and shelter. People with cooperative dogs enjoyed great advantages in hunting and in self-protection. People living with barking dogs would not easily fall victim to surprise attacks. Dogs with cooperative people got a more reliable food supply, including access to big game such as mammoths, which dogs could scarcely bag by themselves. So, over time, a genetic selection occurred for dogs that worked well with humans – dogs that showed loyalty, barked at the appearance of strangers, accepted human commands, and could read human gestures and expressions. Meanwhile, a cultural selection took place for human groups that worked well with dogs, training them, breeding them, protecting them, and eating them only in extreme need. The Ainu, a people in Japan's northernmost island of Hokkaido, even taught their dogs to catch salmon for them. The dog-human symbiosis spread rapidly and became well-nigh universal.

The domestication of dogs was the first of many such in the human career. Dozens of animals and hundreds of plants proved susceptible to domestication. Almost all of these domestications took place in remote times before written records. But archaeologists can often tell the difference between wild and domesticated species from remains of seeds and bones.

Few things in human history have mattered as much as domestication. Raising one's food as opposed to collecting or hunting it implied broad changes in the human way of life. It required people to submit to laborious routines but allowed enormous expansions in terms of cultural richness and diversity. Mobile hunters and foragers around the world had only a few tools (often very similar ones), the same social structures just about everywhere, and – as far as we know, which is not terribly far – roughly the same sorts of ideas about nature and spirits. In the late Paleolithic, some people settled down in a few choice spots, becoming at least semisedentary if not fully so, and a notable elaboration of culture, especially in tools and art, took place. But, by later standards, there wasn't much cultural diversity in the Paleolithic, because almost all people remained mobile and had to carry their culture with them.⁴

With farming, all that would change. As the ice-age cold gave way to warmer temperatures and damper conditions, plant life flourished. Forests replaced steppe and scrubland, deserts retreated, and rivers rose. In many locations, these were favorable trends for people, allowing some groups to settle down and live off newly abundant local plants and animals. In many spots in Southwest Asia, for example, there were plenty of acorns, almonds, and grasses with edible and storable seeds. Some evidence suggests that people were storing seeds as long ago as 23,000 BP. Gazelles and other tasty herbivores provided meat. The scant evidence suggests that population rose across Eurasia in the millennia from 16,000 to 12,000 years ago as the climate warmed and foraging became easier. In a few favored locations, it became so much easier that more people could settle down, at least for most months of the year, living off locally abundant food.

Settled populations tended to grow much faster than mobile ones because they did not have to lug children long distances and were less inclined to try to prevent their birth, or to abandon newborns. When people collected the seeds of wild grasses, they could mash the seeds into gruel and feed it to babies, allowing for earlier weaning from their mother's milk. Early weaning, in turn, allowed mothers to become fertile again sooner (lactating women are much less likely to conceive). So intervals between births tended to be much shorter among settled people than among mobile ones, which meant higher fertility rates and faster population growth.

Population growth among the settled folk gradually caused environmental difficulties. Big animals grew rare due to additional hunting. In the Levant, for example, archaeologists have found that people were hunting smaller and smaller animals as time went on – fewer gazelles