



History of Migration

3

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Abstract

This overview of human migration presents the main practices of migration, their development over time, and their consequences. The emergence of syntactic language, some 70,000 years ago, gave rise to the basic practice of cross-community migration. In this practice, young adults move from one community to another, learning language and culture, exchanging and inventing ideas. This mechanism of dispersion and exchange, elaborated with time, has made and remade human

society, beginning with the expansion of human communities to varying habitats in all areas of the world. In additional practices, networks maintained contact and exchange among communities, consolidation brought the creation of societies and towns, and vertical migration brought hierarchical social structure. Historical consequences of migration included the transformation of local habitats and biota with worldwide settlement, changes in global climate as a result of agricultural expansion and contraction, and the exchange of global biota along with global transport. Migration is associated with current crises of inequality and environmental degradation.

The movement and exchange of migration commonly bring social conflict and losses. Overall, however, migration has served posi-

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tive functions in the human order, especially by reinforcing social and genetic diversity. Migration also shifts the perspectives of individual humans, leading to changes in outlook and knowledge.

Keywords

Accounting of migration · Climate change · Cross-community migration · Functions of migration · Future migration · Language networks · Occupying the earth · Regulation of migration

3.1 Migrant History

This chapter is to consider the history of migration in broad scope. By broad scope, I mean that the study of migration goes back to very early times, to the traditions and myths of origin of each people. Yet migration is also a recent discipline, as European scholars began to study urbanization and overseas migration in the nineteenth century. Today, with expanded disciplines of the social sciences, humanities, and natural sciences, we can explore the whole of the human experience through study of migration, reaching across time and space. To address this wide range of issues, I begin with a focus on human agency, tracing social construction of a sequence of migratory institutions and resulting flows of migrants. Then, at several points, I summarize the local and especially global consequences of human migration, including suggestions on how best to quantify and analyze flows of migration. I conclude by reviewing the functions of migration in society and hypothesizing projections of future migration.

As of a million years ago, tool-making hominid species had gradually spread from Africa to much of the Old World. *Homo erectus*, its body hardly distinguishable from our own, had teeth that were larger than ours and a cranial capacity averaging two thirds that of humans today. By 600,000 years ago, *Homo erectus* had given way to *Homo heidelbergensis*, with larger brain

capacity. Thereafter, *H. heidelbergensis* gave rise to three rather similar communities: Neanderthals in Europe and West Asia, Denisovans from Central to Eastern Asia, and *Homo sapiens* in Africa. All of these changes, while important, were gradual. From 70,000 years ago, the pace of change accelerated.

3.2 Late Pleistocene Innovations in Migration

A more rapid social change arose with the emergence of spoken language among *Homo sapiens* in Northeast Africa (now Ethiopia, Kenya, and Tanzania) some 70,000 years ago. Speech and articulate human interaction brought an expanded social order in this Homeland, leading to rapid migration and settlement in increasingly varied habitats. While details of the emergence of spoken language are not confirmed, I argue that syntactical language began in the interaction of children, playing with communication and forming communities of discourse. A community of at least 150 speakers then arose to sustain the vocabulary and especially the syntax of a language. This speaking community became the first social institution (Manning 2020a: 37–43). Communities and their languages expanded, divided, and spread with time; languages changed inherently over time in lexicon, syntax, and phonology (Manning 2020b).

The exchange of young migrants across communities—what I call “cross-community migration”—was an additional social institution of the new community of speaking humans (Manning and Trimmer 2020; Manning 2006). In cross-community migration, young adult migrants moved to different communities, where they had to learn new language and customs, thus facilitating exchange of knowledge, genetic exchange, and creation of networks linking communities through speech (Manning 2020a: 56). With this additional institution, human migration now became distinctive from that of other mammals. Language, community, and cross-community migration combined to form the basic model of

human migration: these practices supplemented the previous form of migration, the simple population expansion and colonization of new lands.

In the course of the next 50,000 years of expansion across the continents, humans of the late Pleistocene era, living as foragers, extended their basic model of migration. They relied on intimate ties within their communities and built two levels of networks beyond their communities. Among nearby communities, cross-community migration and periodic gatherings sustained *local networks*, sharing knowledge on each new habitat and speeding the colonization of additional lands. Further, *regional networks* linked localized communities into continental webs. The effectiveness of regional networks is attested by the exchange of technical advances over great distances; parallel exchanges spread archery, atlatls (throwing sticks), sewing and weaving. Dogs, who joined human societies some 30,000 years ago, most likely in northeast Asia, spread to communities on every continent.

By 12,000 years ago, a first wave of global consequences of human migration had taken the form of a human imprint on global habitat. Speaking humans had settled all of the continents and had seized a place at the top of the food chain. Our ancestors, an invasive species, modified the habitat of the many localities in which they settled, shifting the balance among other species and laying the groundwork for further migrations. The expansion of our species included absorption of competing hominid species, advances in technology, adaptation to new habitats, and innovations in representation, all relying on the constructed social institutions of spoken language, community, and cross-community migration. Migration, relying on high levels of intercommunication, maintained local communities, sustaining regional networks, and colonized new lands. In the dramatic ecological changes at the end of the Pleistocene, human communities innovated with larger social groups and by adding production of dwellings, containers, and some ceramics to their heritage of foraging. This sudden and variegated expansion, which relied on verbal communication for many of its particulars, tends to confirm the hypothesis that

spoken language and cross-community migration emerged together, roughly 70,000 years ago.

3.3 Variations in Holocene Migration

The Holocene epoch, opening 12,000 years ago and continuing until the recent past, brought change upon change, magnifying human leadership in the animal kingdom and developing additional patterns of migration. Humans expanded their productive skills, giving them increasing independence from the natural world. The results of Holocene-era expansion were both positive and negative: human society now exploited the Earth with an intensity sufficient to bring about climate change.

Holocene variations in the basic model of migration led in three directions. The amplified model of migration added processes of population dispersion, population consolidation and, more gradually, vertical migration and creation of hierarchies. Dispersion brought settlement of additional habitats; consolidation brought exploitation of existing habitats with denser populations and construction of more complex social orders. In a genuinely new variation on migration, vertical migration arose to enable the creation of social hierarchies. During the 12,000 years of the Holocene, these further variations on cross-community migration facilitated institutional and technological innovation, creation of new networks of dispersion and consolidation, and population growth.

In dispersion, the continued warming of the early Holocene reinforced the spread of migrants across distances. In West Asia, speakers of Afroasiatic languages moved from the Nile Valley to all of Northern Africa, the Levant, and Arabia; in East Asia, speakers of Chinese languages moved from southwest highlands to the northeast of today's China (Manning 2020a: 93–98). In the Americas, migrants moved eastward in South America and from North America into Meso-America (Manning 2020b).

In consolidation, the social organization of the Holocene epoch confirmed the concentration of

migrants by creating societies of 1000 or more members which formed by consolidation of six or more of the earlier communities. Formation of Holocene societies expanded the size of language groups, reinforcing social diversity and division of labor yet sharing an identity that we can call ethnicity. As the Holocene proceeded, agriculture arose in key centers—in Asia, New Guinea, Africa, and South America—and then spread within those regions. Initial crops included wheat, barley, rice, millet, sorghum, taro, and yams; domesticated animals included donkeys, goats, sheep, cattle, pigs, and chickens. Towns formed, reaching populations of 10,000.

Dispersion and consolidation in migration, in the mid-Holocene era, brought a second wave of global migratory consequences. That is, migration and expanded agriculture brought stable climate from the mid-Holocene to the Anthropocene. Climate stability, in turn, encouraged further settlement and social expansion. The multi-pronged argument of geologist William Ruddiman is central to this analysis (Ruddiman 2014). He began by noting that the post-Ice Age peak in insolation and temperature, 10,000 years ago, was followed by a decline in temperature and in atmospheric carbon dioxide and methane, as in the previous glacial cycles of climate. But in the most recent glacial cycle, the decline in carbon dioxide reversed and began a rapid rise from about 6000 years ago. Ruddiman showed that human clearing of forest and bush for farming, in many parts of the world, reduced the absorption of carbon dioxide by plant life and also increased Earth's reflectivity. These combined factors caused atmospheric carbon dioxide concentration to increase, preventing solar energy from escaping the earth and raising temperatures. In parallel, methane gas, arising from chemical change in wetlands and later from the burping and flatulence of numerous grass-eating large animals, is even more efficient in increasing temperature. Methane concentration, initially declining after the peak in insolation, began to increase 4000 years ago, reinforcing temperature rise. Ruddiman's explanation was that growing numbers of oxen, cattle, and water buffalo, pulling ploughs in farming—reinforced by the rise of

equine culture—combined to expand atmospheric methane 4000 years ago (Ruddiman 2014: 19–42).

The overall result, confirmed in recent analysis, was that the Earth's natural temperature decline was cancelled out by human creation of greenhouse gases, initially through forest clearing, then by intensive cultivation aided by animals (Vavrus et al. 2018). As a result, temperature from 6000 years ago until the twentieth century maintained a stability that was virtually unprecedented in climate history. This era of Holocene climatic stability, resulting from migration, towns, and agriculture, provided the basis on which human society and economy expanded and evolved dramatically.

In the late-Holocene epoch, 5000 years ago to 1000 years ago, the human model of migration continued its amplification. Social hierarchy added vertical networks to the horizontal networks of dispersion and consolidation. Despite long resistance by those who preferred egalitarian societies, states, warfare and empires expanded along with agricultural and urban societies (Flannery and Marcus 2012: 91–183). This was the era of early cities in Mesopotamia, the Nile, and Yellow River Valley. The Achaemenid state of Persia launched the first large empire in 550 BCE (2500 years ago), after which empires replaced each other until the twentieth century. Reliance on domestic animals, especially in the Old World, provided societies with food, motive force, fibers, and skins: horses expanded the scale of war and of enslavement. Technical and social innovations brought metals, water supply, and literacy. At the same time, farming populations dispersed in many directions: Indo-European speakers settled and opened farms in Europe and South Asia, as did Austronesians in island Southeast Asia, Bantu-speakers in the southern third of Africa, and farmers in North and South America. Fluctuations in climate, disease, and hierarchy continued in rural and urban societies.

The terminal Holocene epoch—the 1000 years from 800 CE to 1800 CE—brought an acceleration of change. The human model of migration gained a new level of activity, as a period of warming brought the expression of ambitions

both in expanded military conflict and in cross-continental and global migrations.

A third wave of global migratory consequences arose from this era's expanded volume of warfare, long-distance migration, and exchange. These human factors combined with epidemic disease to cause population decline and global cooling. This "Era of Collisions," as I call it, included collisions within human society and collisions of humanity with the natural world, bringing alternations of growth and disaster. The collisions included warfare among societies, expansion of both high-status and low-status migration, the creation of a fluctuating global commercial network, and epidemics and climate disasters resulting in part from human expansion. Viking, Fatimid, Song, and other conquerors built empires between 800 and 1000 CE. Steady warming took place from 700 CE up to 1250 CE. Such warming, causing population and agricultural output to rise, is well documented for Europe but also confirmed for other parts of the world (Campbell 2016). At the same time, in the regions where societies had built the densest populations and the most innovative technology, an era of warfare and social conflict unfolded along with the warm and humid climate. Examples on every continent document this era's warfare and successive imperial conquests, alternating with commercial expansion. The Mongol state, exploding from 1200 CE, became the extreme example of conquests in response to new opportunities. Then, after 150 years of Mongol conquest and widespread empire, epidemic disease checked the empire. Bubonic plague, perhaps facilitated by increased contact of the Mongol empire, spread beyond Mongol frontiers from the 1340s through Asia, the Mediterranean, and Europe, causing population, commerce, and empire to decline—and soon bringing similar decline to sub-Saharan Africa (Green 2018).

Ruddiman argues that these epidemics and war casualties show how changes in human society can reduce temperature as well as increase it (Ruddiman 2014). Declining population meant less farming—the fields became overgrown and herds of animals declined, so that carbon dioxide and methane emissions declined, resulting in

temperature reduction. Then, from the sixteenth century, Old World diseases caused a collapse in American populations, as confirmed in a recent genomic analysis (O'Fallon and Fehren-Schmitz 2011). This Columbian Exchange brought a decline in global temperature and may also have led to disease and population decline in the Old World that has not otherwise been accounted for, as exemplified by the case of syphilis. The Little Ice Age, a three-century worldwide decline in temperature, reached its low point in the mid-seventeenth century, thus responding in part to changes in human society.

Migration studies, expanding in geographic and temporal scope, are gradually revealing the long-term dynamics of world history from 800 to 1800. Such studies, clearly linking worldwide population flows since 1500, are beginning to show connections to pre-1500 populations and migration worldwide. Global commerce and warfare each expanded, with fluctuations, from the eleventh to twelfth centuries until they brought the opening of global maritime connections by 1500. Merchants turned especially to enslavement as they sought labor to support expanding commerce. From the fourteenth century, enslavement focused on African laborers so that, from the mid-17th to the mid-nineteenth century, the principal flow of international migrants was that of African captives crossing the Atlantic but also driven to the Mediterranean and the Indian Ocean. Atlantic flow reached 100,000 captive voyagers per year.¹

In an important analytical advance, migration scholars Jan and Leo Lucassen developed a comprehensive framework for accounting of migration, applying it to large and literate cultural and political units (Lucassen and Lucassen 2014: 3–54). Focusing initially on Europe (including European Russia), they tallied several types of both domestic and cross-border migration. For the period 1500–1800, they found the largest cat-

¹Thus, it may be argued that the ambitions of warriors and merchants amounted to an effort to create a hierarchical Human System, in which the rulers of empire formed a superior order, while the enslaved and inhabitants of colonies performed separate functions as subordinates.

egory of internal migration to be temporal multi-annual migration, consisting of the recruitment of soldiers, sailors, and artisans within the region, as indicated in Fig. 3.1. They also tallied seasonal migration, urbanization, and rural resettlement. For external migration, they tallied immigration to Europe (which was tiny) and emigration from Europe (which was larger though much smaller than the contemporary forced migration of Africans). The Lucassens calculated a Cross-Cultural Migration Rate, summing migration in 50-year periods for Europe as a whole and taking it as a percentage of mid-period population for each period. Study of the parallel territories of China, Japan, and India showed some similarity in migration patterns.

For other times and places, one may ultimately be able to trace migratory detail parallel to that of the Lucassens' analysis. The results should reveal how human society transformed itself greatly during the 12,000 years of the Holocene epoch, relying at every step on the institutions and expansion of the preceding

Pleistocene epoch. As people from around the world encountered each other more regularly, new hierarchies and new prejudices arose. Racial categorization and racial discrimination became a part of what marked the difference between migrants of high status and migrants who were subordinated (Manning 2009: 136–45). Such hierarchy is not unrelated to today's rejection and subordination of so many immigrants. One last collision in this era of collisions was the rise of capitalist economic organization—a new type of global commercial network, centered in the maritime powers of northwest Europe. Through creation of social institutions linking leading proprietors to national governments, Dutch, British and then other national economies expanded their influence in the global commercial network through a combination of warfare and investment in commercial practice. By the mid-nineteenth century, an alliance of proprietors, pro-capitalist governments, and their expanding empires gained leadership in much of the global economy.

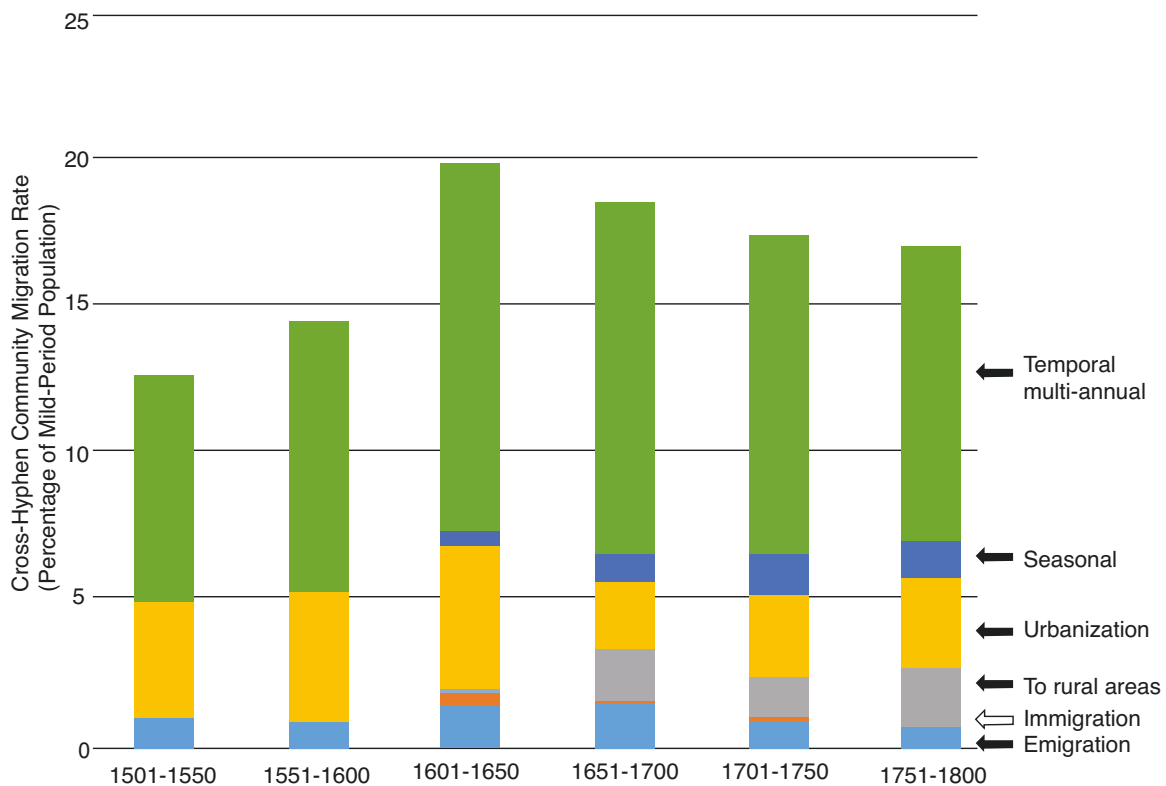


Fig. 3.1 Europe's cross-cultural migration rate, 1500–1800. Source: Lucassen and Lucassen (2014: 17)

3.4 Anthropocene Magnification of Migration

The Anthropocene epoch, beginning in roughly 1800 CE, is defined through the accelerated transformations by which human society became the principal influence on the natural ecology, making it appear that nature was at last being mastered. A new model of migration arose, maintaining many old practices but expanding networks of labor migration, knowledge exchange, and economic exchange. The new practices brought extraordinary growth in the arenas of economics, population, and knowledge. By the twenty-first century, the consequences of expanded migration and growth brought unprecedented social inequality and environmental warming. To face these and related threats to the human system, new networks were required to attend to the needs of refugees fleeing social and environmental crises.

I turn first to the process of growth in migration and society, then to the emerging crises. Language provides an index of the expanding scale of society, as localized dialects gave way to national languages. While statistics are scarce on populations by language, certain language communities had grown by the nineteenth century to a million people—even several million—speaking virtually the same language. Language communities consolidated further during the twentieth century, through the influence of school systems and electronic communication. The same process, however, brought the loss of many languages and dialects absorbed into these huge communities.

Nineteenth-century migration expanded at once for people of low status and high status: steamships had both staterooms and steerage. Travelers included viceroys, generals and their troops, labor migrants for agriculture and industry both rural and urban, as well as merchants and hawkers, students and skilled professionals. Through migration arose industrialization and its ideology of civilizational hierarchy by race, religion, and economic role. Capitalist economic structures expanded in North Atlantic metropolises and colonial peripheries. Coal was essential to

developing steam power, but the burning of petroleum, beginning in 1860, became globally dominant before 1900.

I discuss the process of Anthropocene migration in further detail since it has become so huge and globally connected. Enslavement worldwide rose to a peak in the mid-nineteenth century in the Americas, Africa, and Asia, then declined as wage labor expanded. Irish migration exploded with the famine of the 1840s, followed by other European flows. This was the start of the era of free trade, in which great powers allowed no restrictions on trade and considered migrants as commodities in free trade, to be settled wherever there was a market for them. Nevertheless, indentured laborers too moved to the Caribbean, Southeast Asia, and the Pacific.

Historian Adam McKeown showed that the century of expanded international migration, 1840–1940, was not only transatlantic (McKeown 2008). As shown in Fig. 3.2, McKeown traced peaks of 3 million emigrants per year—migrants leaving China, India, and Japan as well as those leaving Europe; he traced both the eastward and westward movement of Russians. Combining McKeown’s analysis of international migration with the Lucassens’ comprehensive analysis, both confirm that emigration grew greatly for Europe, while the Lucassens show that, in domestic migration, European urbanization expanded while “temporal multi-annual” migration declined (Lucassen and Lucassen 2014).

Elsewhere, other migratory factors intervened, transforming the regulation of migration. Migrations from the 1840s to 1870s included Chinese migrants to California and elsewhere in North America. White citizens of the United States, having just conquered California, alternated between recruiting Chinese migrants as subordinate workers and expelling them as threats to American dominance of their newly acquired territory. McKeown found that US national bureaucrats sought to replace crude expulsion with another tactic for limiting immigration (McKeown 2008: 149–84). They replaced the idea of migrants as commodities with the idea that some migrants might qualify as “free persons,” persons of civilized background, able to

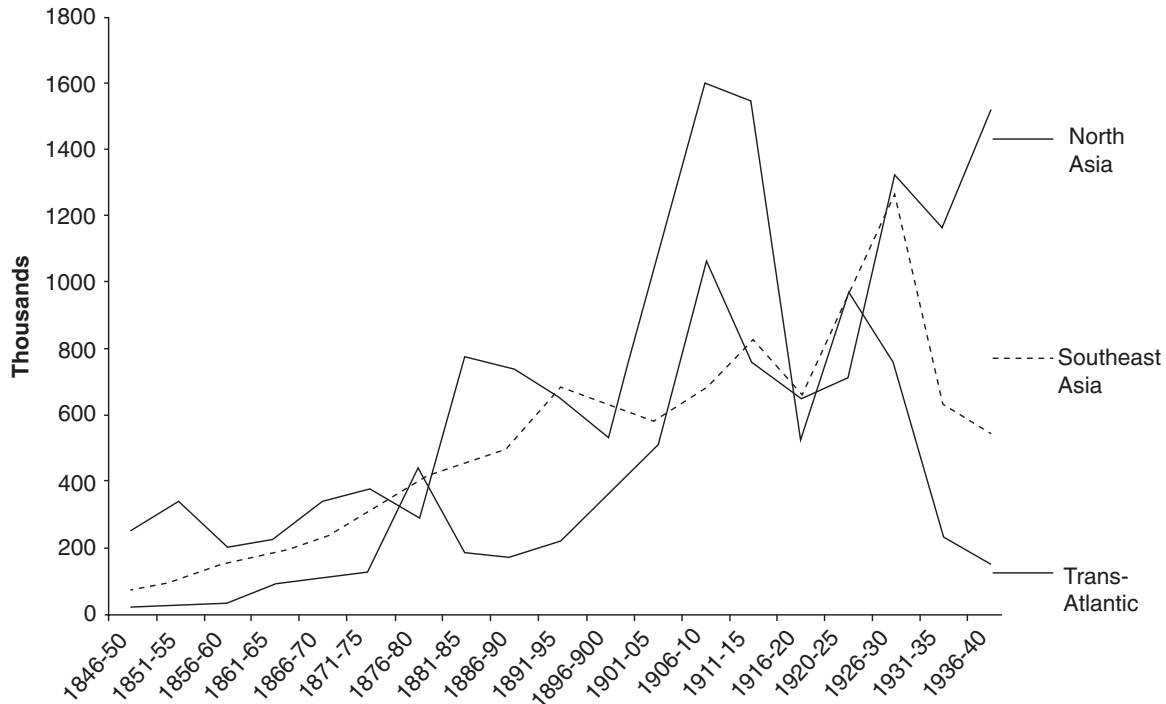


Fig. 3.2 McKeown (2008) on global migration

contribute to the progress of the nation. The result allowed admission of small numbers but rejected most applicants. Each applicant for entry had to demonstrate an elaborate record of familial and professional excellence. In response, schools developed in China to prepare the applicants. Elaborate systems of passports and visas, inspected by a complex border bureaucracy, grew up within the US, then among other American nations, and gradually worldwide. In the 1920s, the US was able to establish restrictions on the number of persons who could enter the nation from any other land, privileging high-status over low-status migrants.

In two world wars, empires fought to the death in great, global cataclysms, involving huge migrations of military forces and great flows of refugees. (Those wartime migrations should be studied in more detail.) The Second World War led to restructuring of the global social order. A wave of decolonization brought national independence for Asian countries in the 1940s, for African countries in the 1960s, and then more generally. Formation of the United Nations, in part to preserve the peace among great powers,

ended up doing at least as much to facilitate relations within the expanded community of nations. By the 1970s, empires had been replaced by passports and visas—and national statistics—for nearly 200 nations.

But with the abolition of slavery, reinforced by the limits on admission of overseas workers, the demand in wealthy nations for low-wage agricultural workers became more insistent. In the 1940s, the U.S. set up separate arrangements to bring in temporary workers from the English-speaking Caribbean for eastern US farms, and from Mexico for western lands. Out of these initially temporary flows developed permanent settlements of West Indians and Mexicans in the eastern and western portions of the US (Hahamovich 1997; Galarza 1964). In the context of decolonization, these migrations reflected the increased mobility of colonial and semi-colonial peoples. Even so, there had arisen two regimes of international migrants: to oversimplify it, high-status migrants could gain citizenship in their countries of destination, while low-status migrants could move only as temporary laborers.

By the opening of the twenty-first century—after decolonization, the rise and fall of communism, and the marginalization of trade unionism—a newly powerful industrial and financial capitalism had incorporated 200 nations into a global economic network that was united by migration, commerce, and communication. The social and environmental crises of this new order soon became apparent. Social inequality reached unprecedented levels, while hostility to migrants and ethnic differences brought social turmoil. For the second time in a millennium, there was an effort by economic elites to reorganize the Human System along hierarchical lines, replacing the links among parallel regional networks with a sharp differentiation between a small class of the privileged and others who served them. Disruption of the natural world emerged most obviously with rising average temperature, but also with extinctions of species, elimination of forests, disruption of waterways, and eventually by huge mining and manufacturing projects that disrupted the atmosphere, the oceans, the lithosphere, and living creatures of all sizes. Viewed from this perspective, the future of humanity appears uncertain.

The argument that I offer here, asserting the role of migration in past transformation and present disruption, can be sustained only through more detailed documentation. Fortunately, advances in scholarship and data-collection provide a basis for detailed analysis of past migration and for projection of future migration. The United Nations has actively collected statistics since 1950, steadily broadening its scope to coordinate expanding nationhood and social complexity. Analysts, now with expanded knowledge, are therefore in a position to document migration systematically in present and past, making it possible to gain understanding of migration more fully (though not necessarily to control the effects of migration). In addition to population statistics, the UN first emphasized international migration, thinking especially of migration to relatively rich nations. For international migration, tallies have focused on *stocks* of “foreign-born” persons, by nation of residence. The largest such population is in the United States, which had over 40 million migrants in 2015 (15% of the national population

total of 320 million). For the stock of out-migrants in 2015, the largest was 15 million born in India and living elsewhere. Yet stocks of foreign-born provide a one-dimensional view, making migratory populations look huge by showing accumulated numbers over an unspecified time period. Measures of *flows*, in contrast, are more specific in that they give the two dimensions of origin and destination and are also specified by duration.

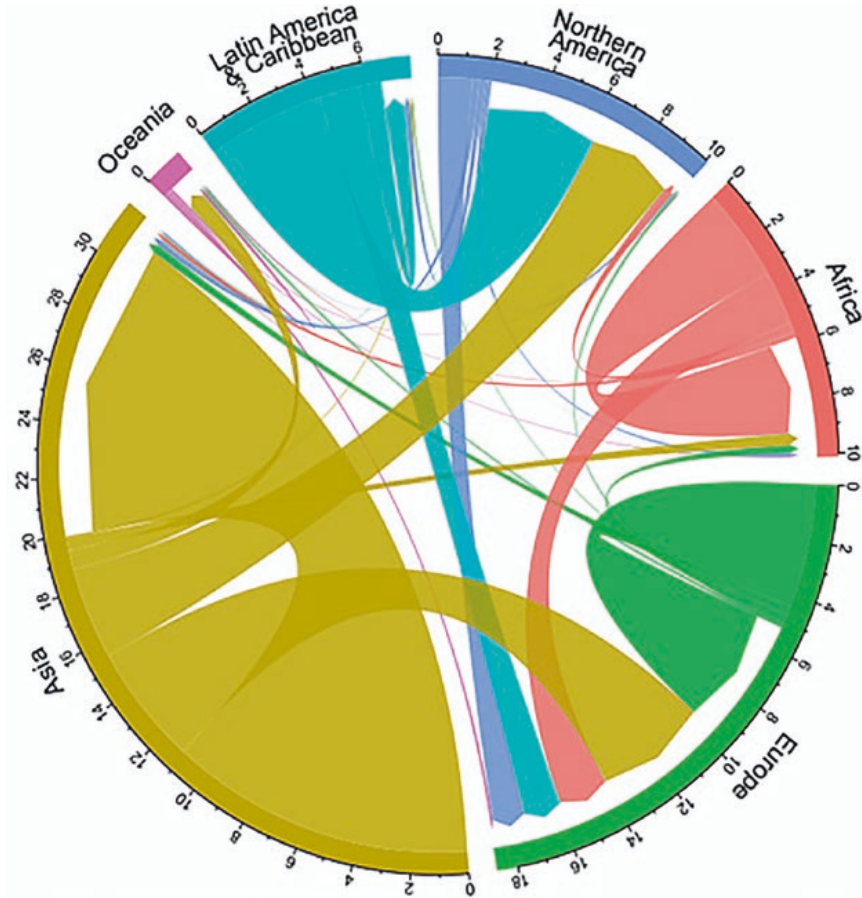
Recent work on migrant flows has developed imaginative graphics such as that in Fig. 3.3, showing regions of origin and destination according to a methodology developed by Abel and Sander (2014). It shows a total of 80 million migrant departures and arrivals in the period 2010–2015, corresponding to departure plus arrival of 40 million individual migrants, at the rate of roughly 8 million per year.² The major flow from Latin America to the US is clear in Fig. 3.3; it is also striking to see how many migrants moved from one part of Asia to another and from one part of Africa to another.

This and other alternative modes of presentation point toward methods for more coherent quantification of migration. One can now identify at least four frameworks for documenting migration, all of which have been reformulated and improved within the past 15 years:

1. censuses and passenger lists, showing emigration and immigration, as shown in Fig. 3.2 (McKeown 2008);
2. cross-community migration and diaspora, a framework for thinking about longer periods of time and migration from community to community (Manning 2006, 2020a);
3. cross-cultural migration rate, accounting for domestic and foreign migration for a territory (Lucassen and Lucassen 2014);
4. United Nations census summaries since 1950, expanded to include urban and rural population, migrant stocks, refugee stocks, and other surveys.

²Outflows of migration begin at the edge of the circle; inflows of migration end with arrows pointed at the destination. Totals of in-migrants and out-migrants are shown at the edge.

Fig. 3.3 Migrant flow, 2010–2015. Source: International Organization of Migration (2018). “With courtesy from the International Organization for Migration (IOM UN Migration)”



All of these frameworks for reporting on migration are calculated on an annual or 5-year basis, except for the Lucassens’ (2014) 50-year calculation of the cross-cultural migration rate.

I believe it is feasible to devise standard figures, on an annual or 5-year basis, to facilitate comparison of migrant flows over time and space. For 2015, Table 3.1 shows the stock of global population, then five major flows as numbers of migrants and as rates of migration per thousand population: births (or net flows of population gain per period), domestic urbanization, and international migrants (the total of professional-level migrants and temporary migrant workers, social refugees, and environmental refugees).

Based on this approach, it should be possible to create standardized, multidimensional estimates of migration flows as a widely recognized statistic. These standard migration rates would need to be calculated on an annual or quinquennial basis. Such standardized migration rates per

Table 3.1 Worldwide migration by category, in millions of persons per year, 2015. Source: United Nations (2018); International Organization of Migration (2018). “Based on data from United Nations Population Office and the International Organization for Migration”

	Population stock and flow	Rate 0/00
Global population stock, 2015	7383	
Annual flows, 2015:		
Net population growth	85	11.5
Migrants urban areas	78	10.6
International migrants	8	1.0
Social refugees	13	1.8
Environmental refugees	25	3.4

thousand population—calculated for nations, sub-national regions, continents, or the globe—could be compared to figures for GDP per capita. While gross domestic product gives a measure of output for discrete and isolated units of society,

migration flows indicate interactions within and among societies. Combining per capita estimates of GDP and migration would yield a more representative summary of social units and their links. Details on migration could be shown by breaking down Table 3.1 by region or otherwise. Thus, births take place everywhere; population growth centers on tropical regions; international migrations are destined especially for wealthy countries; social refugees flee their homes especially in West Asia and Eastern Africa; while environmental refugees are spread widely.

3.5 Future Changes in Migration

This chapter's overview of past migration, though rapid, provides a basis for projecting future migration. In particular, I compare current population and migration (2020) with projections for the year 2050, roughly one human generation from today. I begin with the UN-projected global population of 9771 million for 2050 (Table 3.2, Column 3), based on more than a half-century of UN demographic experience. Regional subtotals within this total reveal the following expected developments. Populations are to decline by 2050 in Europe and northern Asia, while populations will increase modestly in the Americas and Oceania, especially because of immigration. Populations in South, Southeast, and West Asia

and especially Africa will increase. By 2050, Nigeria's population of over 400 million will exceed that of the US; Nigerian population density will be roughly ten times that of the US.

But the UN, while it projects rates of urbanization, has yet to project levels of refugee migration because of their high level of fluctuation. Nevertheless, for the future years of the Anthropocene, one must acknowledge that refugee flows have become part of our reality—both social refugees escaping national-level conflicts and environmental refugees escaping natural disasters. After comparing various migration flows and rates, I offer some speculations on future change in population and migration.

To clarify the complexities of projecting migration into the future, I offer two polar-opposite sets of assumptions. At one extreme, I assume that societies will put forth *maximal reform* efforts to reform society and limit climate change. That is, societies will regulate environmental degradation but also seek to limit economic inequality, limit group antagonisms, and achieve collaboration of all nations—large and small, rich and poor. That is a dream at one pole. The second and opposite polar option is that of *minimal reform*, in which I assume that individuals and societies will implement no additional corrective policy for climate change or social reform. This second pole is the path on which we are currently headed. In Table 3.2, Column 4

Table 3.2 Two speculations on world population and migration, 2050 (in millions). Source: United Nations (2019); International Organization of Migration (2018); Manning speculative estimates for Columns 4 and 5. “Based on data from United Nations Population Office and the International Organization for Migration”

1	2a.	2b.	3a.	3b.	4a.	4b.	5a.	5b.
Variables	Year 2015		Year 2050		Year 2050		Year 2050	
	UN estimate	Rate 0/00	UN Projection	Rate 0/00	Max reform	Rate 0/00	Min reform	Rate 0/00
Global population stock	7383		9771		9500		9300	
Annual flows:								
Population growth	85	11.5	54	5.5	45	4.7	35	3.8
Migration to urban areas	78	10.6	74	7.6	74	7.8	80	8.6
International migrants	8	1.0	–		25	2.6	16	1.7
Social refugees	13	1.8	–		20	2.1	40	4.3
Environmental refugees	25	3.4	–		40	4.2	120	12.9

shows my projected 2050 figures for the maximal reform option, while Column 5 shows my estimates for the minimal reform option.

To complete the figures for Columns 4 and 5 in Table 3.2, I made additional assumptions, as follows. *Global population* and its growth (in Columns 4 and 5) are less than the UN projection in Column 3 because of lower tropical birth rates in the case of Max Reform and because of higher mortality rates worldwide in the case of Min Reform. *Urbanization* rises for the case of Min Reform as people flee the countryside. *International migration* triples with Max Reform because of expert allocation of skilled workers; it will double with Min Reform. *Social refugees* rise only modestly with Max Reform because of international cooperation but rise rapidly with Min Reform because of environmental and social chaos. *Environmental refugees* rise despite Max Reform because of temperature rise but rise even more to become the main form of migration in the case of Min Reform. While I have assumed that life expectancy and birth rates will each decline because of environmental crisis, my projections assume—perhaps dubiously—that levels of education and professional skill will continue to improve. These are preliminary speculations but I hope they can stimulate discussion, both to improve the technique of projecting migration and to draw the attention of policy-makers. I would not be surprised to find, if I were to survive for 30 years, that the deviations from past patterns became greater than I projected.

3.6 Conclusion: Functions of Migration

I have emphasized the role of human migration in creating an expanding succession of social groups and multi-layered networks. The basic human model of cross-community migration developed a sequence of variations, responding to changing social circumstances. Pleistocene migration began by supporting individual communities, then facilitated the colonization of new lands, the maintenance of community networks, and the long-distance exchanges of technology and cul-

ture. Holocene migration added a balance among dispersion, consolidation, and hierarchy of populations, finally generating global interconnection in migration. Anthropocene migration built networks for moving labor and knowledge, then began creating networks of social and environmental refugees.

I identify four principal functions of migration in the human order, which have operated simultaneously at the levels of community, society, and global system. Most fundamental is the function of *sustaining human diversity* in genetic constituents and in the social order. Cross-community migration, in which some young people typically leave their home to join another community, is a social mechanism of diversification that adds to the pre-existing genetic mechanisms.³ Cross-community migration expands genetic diversity by bringing new genetic constituents into communities which, if left isolated, might become narrowly specific through genetic drift. Similarly, cross-community migration expands social diversity by opening discussions among people of different backgrounds, both enabling them to exchange their existing ideas and to develop new ideas out of their interaction. In another sort of diversity, migration is commonly unpleasant, fearsome, and dangerous. It facilitates human stratification through hierarchy and inequality. The arrival of migrants in a community may raise hostilities of one sort or another—as the receiving community seeks to repel or otherwise eliminate the migrants or as the migrants seek to conquer, oppress, or eliminate the community they enter.

The second function of migration is to *mediate society's links to the Earth's climate and environment*. Human activities have caused both rise and fall in global temperature, initially at a relatively small but significant level, and now with great power. A new factor today is the idea of conscious human intervention to limit temperature change. Nevertheless, temperature rise is

³Genetic mechanisms of diversification include mutation of genes, recombination of chromosomes, and epigenetic or life-course modification of genetic activity by proteins.

such that polar ice caps will soon disappear and will not return. A third function of migration is to *mediate connection within human society*. Migration may cause social changes but may also simply spread news. Migration causes change as it influences both diversity and stratification: in recent centuries of global interconnection, migration has facilitated changes in identity. Even when migration is not a causal agent, it carries messages of change and innovation, as in spreading news on how to accomplish the shift in governance from empires to nations. Finally, the fourth function of migration is to *influence conceptualization*. Each migrant gains a new physical standpoint, creating new perspectives and generating new observations. Migration facilitates interactive thinking, as it takes one beyond thinking within a single category. Overall, migration is socially and biologically valuable in the interconnections that it facilitates at various levels.

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