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Design with Nature Now

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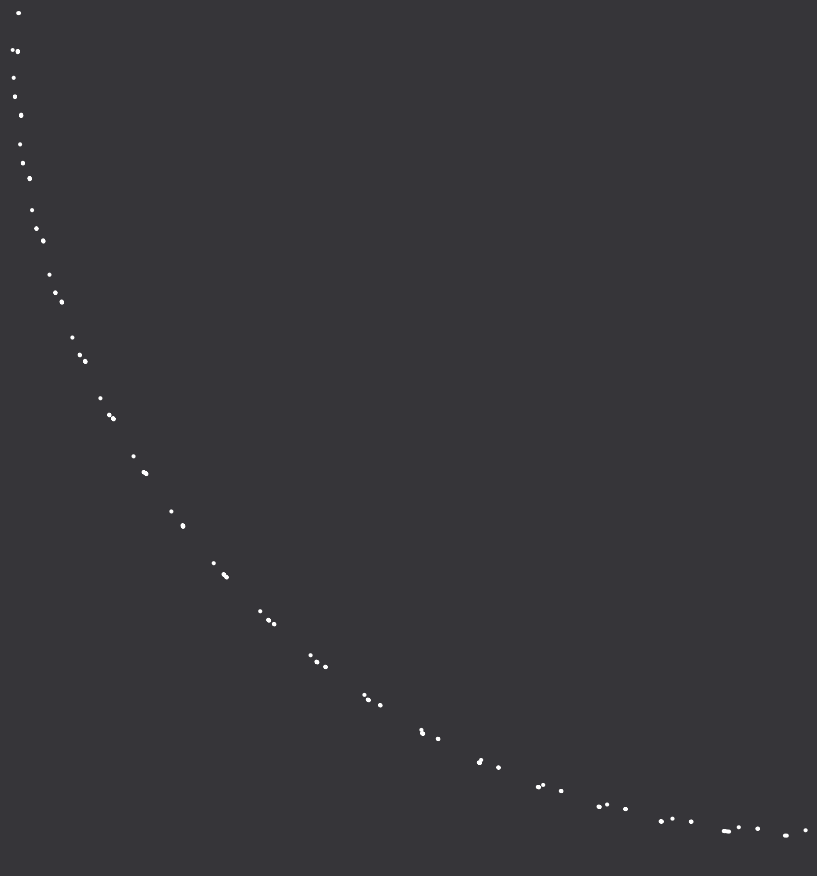

CHAPTER 10

Nature as Designer: Emancipating Nonhuman Ecologies in an Increasingly Human World

Erle C. Ellis

FOR MILLENNIA, WE HUMANS have had our designs on Earth. By reshaping this planet to sustain ourselves, we have left no more than a quarter of Earth's ice-free land beyond the direct influences of our settlements, agriculture, and other infrastructures.[1] Combined with rapid changes in climate and the species we are moving around the planet through trade and transport, the increasing reach of our globalizing societies is felt virtually everywhere.[2] Wild spaces beyond the intentions of human design still linger at the margins of our working landscapes, cityscapes, and seascapes, yet are nevertheless influenced by the unintended emanations of human societies.[3]

On this planet of nearly eight billion people, and billions more to come, humans already form a mass ten times greater than that of all of Earth's remaining wild mammals combined.[4] In this vast expansion of the human world, too many populations of wild creatures and wild ecologies of the prehuman past are shrinking toward extinction. Now, Earth's climates, soils, species, and ecosystems change with us, not without us. As Earth moves deeper and deeper into its human age, the Anthropocene, its landscapes have become anthroecological palimpsests, written and rewritten over and over by generation after generation of societies, locally, regionally, and globally.[5]

FIGURE 10.1 Planetary urbanization. *© 2017 Richard J. Weller, Claire Hoch, and Chieh Huang, Atlas for the End of the World, http://atlas-for-the-end-of-the-world.com.*

By constructing our niche across this planet, the sociocultural forces of our societies have become inextricably entangled with the workings of Earth's entire biosphere.[6] Even where wildlands still persist, from the forests of Amazonia and Białowieża to the Siberian Tundra, biological communities and ecological processes already bear our fingerprints.[7] Now, with contemporary societies increasingly cherishing and working to conserve what is left of the wild nonhuman world, our massive global influences continue to reshape Earth's form, functioning, autonomy, and wildness, even without intending to. Every day, there is less and less space to be nonhuman on this increasingly human planet.

Is there any hope of sustaining the evolutionary treasures of the prehuman world across the long arc of the Anthropocene? Can new forms of design break the Anthropocene narrative of an ever-expanding humanity presiding over an ever-declining nature? Can the human world be redesigned to regenerate, expand, and sustain wild places free of ongoing human influences, even while sustaining humanity at increasing scales?

Losing the Wild, Gaining the Anthropogenic

Remarkably, times have never been better for many creatures, especially those of our own design, our domesticates—from cattle to kittens—which together now far outnumber and outweigh us.[8] The same holds for those adapted to, commensal with, or parasitic on the human world. The anthropogenic biosphere is a world of opportunity for life adapted to the niches we have constructed—our crops, livestock, pets, ornamentals, weeds, pests, parasites, hitchhikers, and hangers-on. From the human microbiome to the indoor biome to the used and novel ecosystems embedded within the anthromes that cover more than three-quarters of Earth's land, the species we favor and that favor us are flourishing, evolving, and adapting to an ever more dynamic human world.[9]

Not so the rest. Wild species, especially wild animals, are being lost at alarming rates. The cause is mostly habitat conversion and loss, combined with unregulated hunting and resource use, pollution, competition with species transported and introduced by us from other parts of the world—both intentionally and unintentionally—and, increasingly, global changes in climate.[10] While hunter-gatherer societies of the late Pleistocene initiated this mass defaunation of the biosphere, contemporary extinction rates, especially on islands, raise serious concerns about the potential for a sixth mass extinction event in Earth history.[11] Although it is far too early to tell whether a mass extinction will come to pass, the consequences of Anthropocene defaunation include not only losses of Earth's evolutionary heritage but also the wholesale transformation of ecological form and function across the biosphere.[12] For example, Earth's temperate

forests and grasslands have already been largely converted to croplands and rangelands and an entire biome has been lost; the Mammoth Steppe.[13]

Yet even as wild species and wild spaces give way to novel anthropogenic ecologies, it is important to acknowledge that there is nothing unnatural about this or about them. The human world of a human epoch is producing novel ecologies and even new species.[14] They differ, often profoundly, from those that evolved before us. But Pleistocene ecologies differ greatly from those of the Pliocene that came before them, and the Miocene before that. Anthropocene ecologies are merely Earth's latest natures, with novel evolutionary pressures acting on the species of the past, leaving some as they are, bringing new ones into being, and mixing them together in the novel communities and ecosystems that will represent the Anthropocene's contribution to the geological epoch that comes next, perhaps as long as millions of years hence.

Natures Emerging

Measurements show that some of the densest urban settlements on Earth contain biological communities as species-rich as some of the most remote tropical rainforests, from zoos and arboretums to urban ornamental landscapes.[15] While these communities are usually rich in the same cosmopolitan species found around the world, large numbers of wild native species can also thrive, or at least survive, in urban settings.[16] Yet just to live within such novel anthropogenic ecologies is to be reshaped by them, as, for example, urban environments reshape the foraging habits and even the bodies of wild species dwelling within them, driving them toward nocturnal lifestyles (like *Homo sapiens*?) and boosting the size of moths, butterflies, and crickets for example, while shrinking beetles and weevils.[17]

Evolution continues, and life will go on. The socially shaped ecologies and species of the Anthropocene are new and novel natures, but they are natures just the same. But the single most important fact about the emergence of these unprecedented new ecologies is that these in no way require that those of the past be lost. Most of the species that came before us, albeit with far too many notable exceptions, are still here with us. Even some species of very distant epochs, tens to hundreds of millions of years before today, from horseshoe crabs to crocodiles to *Ginkgo biloba*, have persisted across profound changes in Earth's functioning as a system to thrive into the present day. There is no ecological requirement that the anthropogenic ecologies and species of a human epoch must exclude those that came before.

For all their rich diversity, the novel biological communities, ecosystems, and environments of urban, agricultural, and other anthropogenic landscapes are no substitute for the wild nonhuman ecologies of the prehuman world. Just as "frozen zoos" (and arboretums) might guarantee species' survival into the future, no one would consider

these an adequate substitute for lives lived in the wild. The ecologies of the human world are not enough. It is time to go beyond the sociocultural designs that are rapidly reshaping this planet, to embrace the designs of the nonhuman and prehuman world. To accomplish this, we must recognize that the greatest challenge of ecological design in the Anthropocene is not how to design with nature, or even how to design for nature. In this human epoch, the most challenging design of all is to empower nature as designer.

Design *with* Nature

McHarg's call to design with nature deserves to be celebrated as a profound theoretical, technical, and ethical advance over conventional designs disconnected from environmental realities.[18] By fitting designs to ecologies, McHarg's approach has produced both better outcomes and new norms of design practice, including preferences for native plantings and ecoregional planning. Building on this approach, nature-based solutions have many well-known advantages over conventional gray infrastructure designs, including greater resilience.[19] Green spaces have also been proven to enhance human well-being.[20] Design with nature is clearly good for us—and certainly better than designs without nature.

Yet McHarg's "ecological view" and its integration into design remains a product of the environmental thinking of its time, emerging in the wake of the publication of Paul R. Ehrlich's *Population Bomb* and right before Dennis Meadows et al.'s *Limits to Growth*. In *Design with Nature,* McHarg calls "the quest for survival, success, and fulfillment" of humanity into doubt based on serious environmental concerns. While calling for a purge of "dominion and subjugation" as the model for "man's relation to nature," McHarg still echoes Stewart Brand's "We are as gods and might as well get good at it."[21] The faith is placed in "Man" as gardener of the planet. Good for people perhaps, but good enough for the rest of nature?

For McHarg, "The farmer is the prototype" and the goal is twofold. First, to ensure that "his creations will be appropriate to the place," and second, to lead "the way for the man who would be the enzyme of the biosphere—its steward, enhancing the creative fit of man-environment, realizing man's design with nature."[22] No doubt McHarg's aim is also better outcomes beyond the human world. But the focus is firmly on setting the human world right with nature, not on making space for the rest of nature to thrive without us. The natural world is incorporated into design projects as functional and aesthetic elements, and designs are tuned into environmental constraints and opportunities. Human habitats are improved, while also creating and sustaining ecologies that benefit our nonhuman fellow travelers, including the broad host of species capable of utilizing hybrid human-natural habitats and living in varying states of cohabitation with the human enterprise.

For all these good intentions, though, even design with nature, let alone design without it, has often proceeded without adequate effort to preserve, sustain, and enrich nonhuman lives. As a result, these continue to become ever rarer and ever poorer.

Design *for* Nature

Long before design with nature, there were efforts to design for nature. Contemporary industrial societies are not the first to make space for wild lives. Polynesian tapu areas and species,[23] India's sacred groves,[24] and the royal hunting grounds of Europe and elsewhere[25] are but a few of the many traditional sociocultural designs that restrict or redirect human influences away from the nonhuman world. Contemporary conservation designs, including the designation and management of public lands for conservation, are both innovations and variations on the evolving cultural priorities of societies around the world that have helped to sustain biodiversity for generations in many regions.

New reserves, parks, wildlife habitats, and other spaces designed to sustain nonhuman species and wild ecologies continue to evolve and adapt to cultural trends within and among societies. In the emerging industrial world, design criteria for conserving wild places and wildlife have long been divided between a focus on "nature for nature's sake" and "nature in service of humanity," as epitomized by the century-old debate between the preservationism of John Muir and the conservationism of Gifford Pinchot.[26] Even Aldo Leopold's efforts to achieve "harmony between land and men" failed to settle these arguments.[27] Debate has most recently erupted over valuing ecosystems based on the services they provide to societies[28] rather than through a broader appeal to diverse cultural valuations through the framework of "nature's contributions to people" recently adopted by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).[29] Further afield from mainstream conservation, but increasingly popular among environmentalists and scholars, are constructs of conservation for the sake of "biodiversity,"[30] and emerging posthumanist narratives that decenter the human from a position of control[31]—cultures of nature that seemingly circle back toward those of indigenous hunter-gatherer societies. Yet even the most ancient, traditional, and ecocentric nature valuations of human societies must be seen as evolving sociocultural constructs—cultures of nature that are just as subject to change as are human languages and material cultures.[32]

In this time when human transformation of the biosphere has never been greater, nature conservation has developed into a vast and expanding human enterprise already engaged in governing more than 15 percent of Earth's land.[33] Guided by evolving conceptions of "naturalness," conservation designs vary dramatically, shaped both by a wide diversity of cultures of nature and the social aims and effectiveness of the many different governance systems in operation,[34] from well-funded national park systems to

public rangelands to traditionally managed indigenous lands[35] to "paper parks" offering little to no protection to the nonhuman world. Despite recent calls for designs for nature's governance to encompass more consistent and scientifically tractable principles, including "historical fidelity, autonomy of nature, ecological integrity, and resilience, as well as managing with humility,"[36] the evolving sociocultural processes that govern all human enterprises apply equally or perhaps even more to practices of nature conservation and restoration.

As societies develop and evolve, so do their conceptions and experiences of nature and naturalness, yielding shifting baselines for conservation design and management.[37] Moreover, efforts to maintain historical conditions and sustain dwindling populations of rare species often require increasingly intensive management interventions to counteract the effects of shrinking populations and gene pools, deforestation, agriculture, extractive industries, urbanization, species introductions, fire, pollution, and other human influences, not to mention long-term shifts in the ranges of species and habitats induced by climate change. The interventions needed to reverse these effects are themselves causing further alterations of ecological patterns and processes.[38]

Even when the goal is naturalness, a nature managed is inevitably a human nature. Even designs for nature evolve with the human social worlds that create and sustain them. Perhaps that is all that is possible in an increasingly human world. But let us consider the prospect of designs that empower nature as designer.

Nature Beyond Design

Is there any human being who truly wishes to live on a planet without spaces where wild creatures live free of human interference in habitats as wild as they are? While some might ignore or dismiss the possibility of such a world, I, like E. O. Wilson and many others, believe that the answer is no. We humans, as creatures of the biological world, are biophilic; all human beings love the wild world, albeit in their own individual, acculturated, and socialized ways.[39] For some, wild nature is best kept far away—better seen on TV. Others seek fulfillment from weeks alone in a remote protected wilderness. Still others find it in the ultimate hunting trip, a walk in the woods, the fringes of farmscapes, or the vacant lot next door.

No doubt there are as many ways to love nature as there are to be human. And, for almost every nature humans have desired, there has been, is, or will be a design. Indeed, societal capacities to design and engineer ecosystems have already reached levels capable of transforming the entire biosphere and the Earth system.[40] Designing the natures that sustain us, designing with nature, designing for nature, and even designing just for people: all are nature designs, and all are empowered by the global force that is human social change. In this time when humans have emerged as a force

of nature, not to design at all is to reshape nature just as surely as any design does.[41] Indeed, such nondesigns, emerging through the unintended consequences of human actions in globalized societies, may now be the most potent global shapers of the natural world, far beyond the urban or agricultural landscapes designed specifically to sustain human societies. From global changes in climate to biotic homogenization, the global impacts of failing to design our interactions with the rest of nature—by polluting air, land, and sea; fragmenting habitats; transporting species; overharvesting; overfertilizing; draining, flooding, and channeling—likely exceed the total harm to the nonhuman world produced intentionally and directly by replacing natural habitats through the construction of agricultural, urban, and other human-sustaining landscapes.

In the wake of such widespread human transformations of this planet, both intended and unintended, novel anthropogenic ecologies now emerge rapidly wherever lands are left unmanaged, including even the remotest areas on Earth that have been set aside to conserve wild nature. As these transformative influences continue increasing in scale, extent, and intensity, human needs and desires are reshaping the biosphere, even where we do not intend them to.

Under such seemingly inescapable forces of anthropogenic transformation, is there any prospect for designing natures uninfluenced by the human world? Ironically, as human societal capacities for design and engineering continue to advance, the answer should be yes.

Yet the conception of a nature designed without a designer is clearly paradoxical. In designs of, with, and for nature, a human or humans, together with their social worlds, are always the designer, making the rules and enforcing them. In all such designs, even in conservation areas carefully managed to counter the influences of the human world, these influences nevertheless intrude, often overwhelmingly, as they do for the rest of life on Earth. Any design that would sustain wild spaces for wild species beyond the influences of the human world needs to be a design of unprecedented ambition capable of operating at the scales and intensities necessary to reverse, or at least hold back, Earth's newest force of nature. Although many possible such designs remain to be imagined, the following two have recently emerged and demand further thought and development.

Designs on the Biosphere

The Half Earth project, which aims to set aside half of Earth's surface as an interconnected conservation reserve, is likely the most radically ambitious aspirational vision of conservation ever.[42] Best known through E. O. Wilson's book of that name,[43] though

originally proposed by Harvey Locke, as *Nature Needs Half* in 2013, the goal is to produce enough space to conserve more than 85 percent of Earth's species into the deep future. The precise way forward is not made clear in the book, or even in subsequent studies,[44] but the design vision is radically simple, crisp, and clear: sharing Earth half-and-half sure seems like a fair shake, and a better Earth for the rest of nature will also be a better Earth for us. Most important, even though the political, economic, and other social implications of such a project are staggering and potentially unattainable,[45] the Half Earth vision is positive and easy to embrace—miles ahead of the typical doom-and-gloom environmental messaging that has discouraged so many.[46] And done right, such a plan has an unprecedented capacity to facilitate the conservation of Earth's ecological heritage into the future.[47] Half Earth, or a related design of similar scale, may be the only design capable of ensuring the continuation of the species and ecologies that came before us.

Reshaping half of Earth's land into a global conservation reserve would undoubtedly be the most challenging landscape design and planning process in history. Sharing the planet unequally with one another is hard enough. Sharing land equitably across ecoregions—including Earth's most productive and densely populated regions—would demand global trade-offs in land use that are hard even to imagine, though computations of its potential impacts on agriculture demonstrate it would almost inevitably affect food systems at some level.[48] Whose half will be conserved or restored? Where will lost agricultural production be made up? Who wins and who loses in the great global land trade-off? Who would compensate whom?

Design of a truly equitable, effective, and sustainable global conservation system would need to be more than a global property portfolio in the hands of a few powerful institutions. Multilevel, not top-down, modes of governance, defined by strong local and regional institutions, as well as novel forms of social collaboration among private and public stakeholders, would be required at all levels. Elinor Ostrom's visions on the governance of common-pool resources offer insights into the institutional practices that might facilitate such collective management of a shared reserve covering half the Earth.[49] The dichotomy between used lands and protected areas would also need to transition into a continuum of strategies for integration, from interconnected regional national parks and indigenous reserves to urban green spaces, prairie strips, hedgerows, wildlife bridges, dam removal projects, and experiments with conservation management. Diverse emergent codesigns will be essential to navigating the compromises that will make a shared planet valuable to people and viable for wildlife.

What would a globally interconnected reserve covering half of Earth's land look like? A global patchwork of organic farms, green cities, rural villages, and indigenous reserves interspersed and interconnected with less disturbed habitats? Separate seas

of dense cities and intensive farms, with protected wilderness areas in between? Would shared spaces, where people and wildlife coexist, increase? Or would they disappear? Would nature feel closer or farther away? These are just some of the hard questions. Even more important, will it ever even be possible to conserve or restore habitats extensive enough, and interconnected enough, to enable life on Earth to roam across the continents and evolve its own solutions to the changing climates and environments of the Anthropocene?

With 15 percent of Earth's land already protected and another 2 percent on the way, interconnecting 50 percent of Earth's land to create a global conservation reserve is at least in the realm of possibility. And one thing is sure. Though the challenges are as extraordinary as the opportunities, in these times of unprecedented global connectivity and interdependence among human societies, the time has never been riper for a global social enterprise to open up the vast spaces needed for wild species to evolve beyond the confines of the human world.

Nature as Designer

Redesigning human use of the biosphere through design for nature is necessary to sustain the biodiversity and wild spaces we treasure. Even the most old-school nature conservation strategies, including traditional hunter-gatherer management regimes, must play a fundamental role in conserving Earth's remaining biodiversity. Together with the development and evolution of more and more effective conservation designs and practices, these classic strategies will continue to be critical for sustaining nonhuman natures in the face of human pressures. Indeed, the radical expansion of these approaches is essential to ensure the future of the nonhuman world across the age of humans. But making space for nature, and even designing for nature, are just first steps on the road toward emancipating the ecologies of the nonhuman world from their transformative entanglement with the human world.

With or without people, nature will always change. There has never been a balance of nature; only flux.[50] Conservation in even the most remote wilderness areas struggles with the need to manage a state of constant change driven by a combination of natural and anthropogenic causes, from human hunting to climate change and species invasions. But in the most undisturbed areas at least, long periods without anthropogenic change offer historical precedents to help guide management and design for nature.

In the novel hybrid communities and ecosystems emerging across the remnant and recovering habitats embedded within the human world, there are no clear precedents to guide conservation. Across more than 35 percent of Earth's ice-free land,

where landscapes remain unused or unmanaged, dynamic mixtures prevail, in which species that came before intermingle inextricably with species newly arrived on human coattails. These hybrid communities and ecosystems are without precedent or any realistic hope of returning to some known or even imagined prehuman historical condition.[51]

Yet leaving nature alone is not an option in the Anthropocene.[52] In the face of Earth's newest force of nature, not managing transforms ecology just as surely as managing does. Even in some of Earth's best protected wilderness areas, ever more frequent and intensive management interventions, from herbicides to systematic weeding and culling, have become standard practice to keep invading species and other pressures of the human world at bay. One may argue for or against any of these specific measures, as human pressures mount, but the practice of conserving nature is edging ever closer to gardening and zookeeping. As a result, conservation values and the nature design and management practices they inspire now shape wild populations and ecosystems just as surely as agricultural values and practices can reshape a wild forest into a farm. Calls for rewilding, Pleistocene or otherwise, are just new and different nature values and practices. Ultimately, Pleistocene park is no different than Central Park.

With all of nature now entangled with the transformative forces of globalized human societies, is it still possible to sustain the wild fluxes of nature in forms uninfluenced by the evolving cultures of the human world? Or must wildness only diminish over time?

Listening to the Animals, and Plants, and . . .

What are the prospects for painting the human world out of the picture? Can nature be empowered as the designer and manager of spaces within the human world into which no human influence can intrude? Clearly, the challenge to design such wild spaces is like no other. But it is a challenge worth taking up.

Conceptual approaches to such designs are already being investigated, under the rubric of "Designing Autonomy."[53] Central to this rubric is the creation of a "distanced authorship" through the empowerment of a designer with capacities distinct from and beyond those of any human—an artificial intelligence equipped with tools for sensing and interacting with organisms and environments to enact values and practices learned directly from the nonhuman world.[54] Such designs will likely remain preliminary and speculative in the near future. Yet they are no mere fantasy. Rather, they are within the realm of technologies under development, including capacities for deep learning and interactive management uninformed by human culture and equipped with skills beyond those of any human being.[55] They include the ability to listen to and sense the activities of animals, plants, and entire biological communities and ecosystems, [56] to interact helpfully with organisms and environments—facilitating movements, reproduction, and basic needs—

and to interfere with, reduce, and eliminate the intrusions of the human world, from noise cancellation to trash removal.[57]

Although technological approaches to empowering nature as designer may raise more problems than solutions, it is ever harder to imagine ways to decouple the human and nonhuman worlds without the intervention of a third party with capacities beyond those of either. At the very least, the philosophical and ethical implications of creating autonomous wild spaces demands consideration in a time when autonomy from the human world is increasingly challenging to enact or even to envision.

Ensuring that nonhuman natures can continue to evolve independently of the human world feels like the right thing to do. The very idea connects with the deepest and broadest human love of nature. In emancipating the nonhuman world from human transformation—by creating wildness—we may find even more than preservation of the world.

Republic, and Switzerland, the freedom to roam takes the form of general public rights that are sometimes codified in law. The access is ancient in parts of Northern Europe and has been regarded as sufficiently basic that it was not formalized in law until modern times. However, the right usually does not include any substantial economic exploitation, such as hunting or logging, or disruptive activities, such as making fires and driving off-road vehicles.

30. McHarg, *A Quest for Life*, 15.
31. The most appropriate definition of "metropolitan" in the U.K. is provided by the Centre for Cities, which has defined the Primary Urban Area as a measure of the "built-up" area of a city, rather than individual local authority districts. See website of the Centre for Cities at www.centreforcities.org/puas/.
32. Doug Saunders, *Arrival City: How the Largest Migration in History Is Reshaping Our World* (New York: Vintage, 2011).

    "The largest migration in human history is under way. For the first time ever, more people are living in cities than in rural areas. Between 2007 and 2050, the world's cities will have absorbed 3.1 billion people. Urbanization is the mass movement that will change our world during the twenty-first century, and the 'arrival city' is where it is taking place.

    The arrival city exists on the outskirts of the metropolis, in the slums, or in the suburbs; the American version is New York's Lower East Side of a century ago or today's Herndon County, Virginia. These are the places where newcomers try to establish new lives and to integrate themselves socially and economically. Their goal is to build communities, to save and invest, and, hopefully, move out, making room for the next wave of migrants. For some, success is years away; for others, it will never come at all." (From the flyleaf)

33. McHarg, *A Quest for Life*, chap. 1.
34. New Lanark lies on the River Clyde, harnessing water power; it was founded in 1786 by David Dale, who worked with his son-in-law Robert Owen to create an industrial model village with enlightened employment conditions. Owen later became involved in the establishment of New Harmony in the U.S. state of Indiana. On the exploitation of peoples, see, for example, C. A. Oakley, *The Second City* (Glasgow: Blackie & Son, 1967). Once a source of great pride, the twin epithets "second city of empire" and "workshop of the world" have become less favored in the 21st century with the widening realization that the "wealth of empire" was founded on the exploitation of peoples and countries and on the slave trade; it also extracted a great price from Glasgow in terms of the state of its environment and the health of its people. In Glasgow, as in other cities of the United Kingdom and the United States, there is greater humility and contrition in this realization today.
35. There are numerous trusts and spiritual organizations that work with these communities. See, for example, the websites of the Iona Community at https://iona.org.uk and the Galgael Trust at www.galgael.org.
36. McHarg, *A Quest for Life*, 15.
37. One of McHarg's first students at Penn was Robert (Bob) Russell Steedman, whom McHarg recruited from the Edinburgh College of Art. He first studied at Penn and later worked for Wallace-McHarg Associates. Steedman recalls McHarg as an "archetypal blunt and charismatic Glaswegian." Author's notes from interview with Bob Steedman at the Scottish Parliament, June 6, 2018.
38. The Clyde Valley Regional Plan was published in 1946 and reprinted in 1996 to celebrate its 50th anniversary and the 20th anniversary of the Strathclyde Structure Plan.
39. McHarg, *A Quest for Life*, 15, 16.
40. Ibid., 16.
41. Ibid., 93, 112.
42. Ibid., 113.
43. After delivery of the master-plan elements, including the Seafar Forest established in response to McHarg's observations on the site, Gillespie founded his practice, William Gillespie and Partners (later Gillespies), where I also practiced for thirty-five years, from 1979 to 2015.
44. Brian M. Evans et al., "Glasgow—A City of Continuing Traditions," in *Poszukiwanie modelu inteligentnego miasta. Przykład Gdańska i Glasgow*, Monografie ekonomiczne (Warsaw: Wolters Kluwer SA, 2015).
45. McHarg, *A Quest for Life*, 110. In fact, Glasgow was awarded the title European Capital of Culture in 1990, following Athens, Florence, Amsterdam, Berlin, and Paris. Not bad for "a mean, ugly city, a testament to man's inhumanity to man" (p. 15).
46. Brian M. Evans, *Ripristino ambientale delle area abbandonate: L'esperienza scozzese* (Environmental restoration of vacant and derelict areas—the Scottish experience), in *La pianificazione nelle area ad alto rischio ambientale* (Planning in areas of high environmental risk), ed. G. Campeol (Milan: Francoangeli, 1992), 150–161.
47. Sue Evans, "Greening Central Scotland—Genesis, Vision and Delivery," in *Growing Awareness: How Green Consciousness Can Change Perceptions and Places*, ed. Brian Evans and Sue Evans (Edinburgh: RIAS, 2016).
48. McHarg, *A Quest for Life*, 112, 151.
49. Evans, "Greening Central Scotland."
50. Is this an exaggeration? In his own inimical style, McHarg claimed in 1970: "I had trained the majority of landscape architects, not only in Scotland, but in England, Wales and Ireland as well." McHarg, *A Quest for Life*, 252.
51. Ibid., 112, 151.
52. I am indebted to the archives of the University of Pennsylvania for providing access to a list of the U.K. graduates.
53. The Royal Fine Art Commission for Scotland was established in 1927 "to enquire into such questions of public amenity or of artistic importance relating to Scotland as may be referred to them by any of our Departments of State" (excerpt from the Royal Charter for the Royal Fine Art Commission for Scotland). The Countryside Commission was established in 1967 "to make better provision for the Scottish Countryside" (excerpt from the Countryside (Scotland) Act, 1968). Both commissions remained in place until the early years of the 21st century, when the devolved government of Scotland undertook an overhaul of all of Scotland's QUANGOs (Quasi-Autonomous National Government Organisations), replacing them with NDPBs (Non-Departmental Public Bodies).
54. I had the good fortune to collaborate with both Steedman and Turnbull over a period of thirty years. As a Countryside commissioner, Steedman oversaw the research that Gillespies undertook on the setting of buildings into the landscape, published in 1991 as *Tomorrow's Architectural Heritage: The Landscape Setting of Buildings in the Countryside*, ed. J. M. Fladmark, G. Y. Mulvagh, and B. M. Evans (Edinburgh: Mainstream, 1991). With a foreword by HRH The Prince of Wales, this book changed the paradigm for the manner in which Scotland's rural buildings were designed and integrated into the landscape. *Tomorrow's Architectural Heritage* informed the publication of a trilogy of Planning Advice Notes published as policy by the government in Scotland: *No. 36: Buildings in the Countryside* (1991), *No. 44: The Landscape Setting of Development in the Countryside* (1994), and *No. 52: Small Towns* (1996).

    Turnbull and I established a twenty-five-year collaboration in computer-aided landscape design and regional landscape studies. The collaboration was founded on the belief that emerging computer-aided techniques in landscape design could greatly assist the delivery of the precepts of *Design with Nature*. Early work and publications in association with the University of Strathclyde (ABACUS, Architecture and Building Aids Computer Unit Strathclyde) and the University of Edinburgh (EdCAAD, Edinburgh Computer-Aided Architectural Design) led to the establishment of methods for the routing of linear developments through the landscape, notably electricity transmission lines for the South of Scotland Electricity Board, later Scottish Power (Scottish Power, 1992), now the subject of a PhD research program at MIT.
55. In 2011, the then president of the Russian Federation enacted a decree to extend the city of Moscow by some 175,000 square kilometers (67,570 square miles) to the southwest. Thereafter, a decision was taken by the president and the mayor of Moscow to stage an international design competition with three strategic outcomes: a spatial commentary on the structure of the Moscow region; a spatial plan for the new city extension area; and a master plan for a new federal administrative center in the southwest expansion area. Ten teams were selected to participate: two French, one Anglo-American, one Spanish, one Italian, one Dutch, one Russo-Japanese, and two Russian. Two prizes were awarded: one to the Anglo-American team led by Urban Design Associates (Pittsburgh, USA) and Gillespies (Glasgow, U.K.) and one to the French team led by the Wilmotte and Grumbach studios.

    The competition and its outcomes have been extensively documented, most notably in a special issue of the magazine *Project Russia* entitled "Greater Moscow" (Большая москва/Greater Moscow, проект Россия/Project Russia, no. 66, April 2012). I have published a number of articles in English about this competition: Brian M. Evans, "Competition for the Expansion of Moscow," in *Water Landscapes, TOPOS—The International Review of Landscape Architecture & Urban Design*, no. 81 (Munich, 2012); Brian M. Evans, "The Ecology of the Periphery," in *The Archaeology of the Periphery* (Project Meganom/Strelka Institute, Moscow Urban Forum, 2013); Brian M. Evans, "Moscow Metropolis—Edge City," *MacMag 39*, Mackintosh School of Architecture (2014): 160–161; Brian M. Evans, "Moscow River, a Living Environment," in *Resilient Cities & Landscapes, TOPOS—the International Review of Landscape Architecture & Urban Design*, no. 90 (Munich, 2015).
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58. Extract from the citation by President George H. W. Bush conferring the National Medal of Arts on Ian L. McHarg in 1999. It is a statement that McHarg was rightly proud of and that he reproduced in the preface to the 25th anniversary edition of *Design with Nature* (1992) and in the conclusion to his autobiography, *A Quest for Life* (1996). Reflecting his characteristic panache, however, the quotation is different in the two books!

Chapter 10

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Chapter 11

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5. Ibid., 33.
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Chapter 17

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