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Sankofa Urbanism: retrieval, resilience, and cultural heritage in cities through time

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One frequently cited principle that underlies the current move toward sustainability in urban planning and policy is, “long-term vision, incorporating awareness of the past and looking way into the future.” We name this “Sankofa Urbanism,” from the Ghanaian symbol and proverb that suggests, “it is not wrong to reach back for that which you have forgotten.” Planners and policy-makers have sought to build in cultural heritage as an important feature of “nature-based solutions” for cities. We argue that retrievals from the past in multiple forms can strengthen the integration of biodiversity preservation, community place-making and urban sustainability initiatives. We present a case for broader examination of how the past, along with diverse forms of ancestral environmental knowledge, is deployed to design and realize sustainability plans. We also call for deeper consideration of how urban planning leverages the evidence of archeology and history. The paper features a case study from our work in the Chicago region where heritage-based activities have been developed as solutions to contemporary urban environmental problems.

KEYWORDS

sustainability, urban ecology, resilience, urban planning and design, cultural heritage, place-making, biodiversity, community engagement

1. Introduction

One day in September, 2020, young people from Chicago’s Bronzeville neighborhood painted symbols associated with the natural environment from around the African diaspora onto wooden stumps along a south lakefront trail. Their instructors, local artists Arlene Crawford and Dorian Sylvain, created the *Sankofa for the Earth* sculpture, which stood on the edge of this gathering space where they worked (Figure 1). Covered in colorful mosaic tile, the 10 foot tall Sankofa bird featured portraits of community leaders and honored their African-American ancestors who left the Jim Crow south for Chicago’s “Black Metropolis” during the Great Migration (Drake and Cayton, 1945). Crawford and Sylvain thought it crucial for young people and other residents of Bronzeville to actively participate in the transformation of their adjacent lakefront green space as the Chicago Park District (CPD) worked to expand wildlife habitat in the area.

In this paper, we take inspiration from Sankofa, and the example of those who steward this Chicago gathering space, in order to advance the conversation about “cities and nature” and “past and future.” Recently, calls have intensified for closer attention to history as cities are looked to as sustainability solutions (Wachsmuth, 2012; Angelo and Wachsmuth, 2020). We argue that along with much needed integration of archeological findings, urban sustainability planning also



FIGURE 1

Photo: © John Weinstein, Field Museum. Arlene Crawford states, “In the Burnham Wildlife Corridor, like the Sankofa bird, we go back to fetch it and bring forth our connections to nature and our culture for the sake of the earth’s continuum, and our future. We do this for our community: to raise consciousness of maintaining a healthy, strong, and balanced environment for people and our non-human kin.”

benefits from deliberate and equitable examination of more recent heritage-based connections residents have developed with city environments. Insights drawn from these diverse relationships with urban nature, and from culturally-specific tactics for sustaining lifeways under duress, can complement deep time analyses of urban resilience and prove valuable for designing the sustainable city.

1.1. Sankofa Urbanism

We acknowledge that we are not experts on ancient cities or archeology. We are scholars/practitioners who collaborate with partner organizations to advance urban sustainability. In previously published work, we have directly asked “Does Nature Need Cities?” (Derby Lewis et al., 2019), have discussed our methods concerning “Centering Communities in Conservation through Asset-Based Quality of Life Planning” (Campbell et al., 2023), and have advocated for the creation of a Calumet National Heritage Area (Bouman, 2020). We seek to understand how biodiversity loss in cities might be stemmed and activate the potential power of all members of the human community to do something about it. At the same time, we remain highly conscious that efforts to conceptualize the city/nature problematic and to retrieve multiple cultural histories for present-day planning and place-making efforts are political, contested, and sit at a particular moment in urban history (Turnbridge and Ashworth, 1996; Low et al., 2005).

Our stance takes a cue from Sankofa, from the Ghanaian proverb that “it is not wrong to reach back for that which you have forgotten,” knowing that there is much that can be learned from the study of the

urbanizing process through history for current sustainability planning efforts. This is more than a glib parallel for the people of the African diaspora who have experienced failures of modern urbanization. Planners and policy-makers have sought to build in cultural heritage and community leadership as an important feature of “nature-based solutions” (Cohen-Schacham et al., 2016). For example, a core sustainability principle articulated in the widely-known Freiburg Charter for Sustainable Urbanism is: “long-term vision, incorporating awareness of the past and looking way into the future” (Daseking, 2015). In order to advance a “Sankofa Urbanism,” we present a case for broader examination of how the past, along with diverse forms of ancestral environmental knowledge, are deployed to design and advance urban sustainability goals, which we hope prompts further dialogue among historians, archeologists, urban ecologists, artists, and decision-makers.

1.2. Cities, nature, and sustainability

Recently, in introducing a special issue of *Urban Studies* devoted to the question, “why does everyone think cities can save the planet?” Angelo and Wachsmuth (2020, p. 2216) noted that “‘urban sustainability’ has quickly become a guiding concept of contemporary planning and policy, such that the notion of cities as sustainability solutions already appears commonsensical and even inevitable.” They ascribe the rise of this paradigm since the 1960s to concerns about urban sprawl in the Global North, informal settlements and urbanization in the Global South, and climate change. They argue for a research agenda that is historical, multi-spatial, political, and

representational. They note that “an emphasis on the historical embeddedness of particular configurations of the urban–environmental nexus is a potentially powerful corrective to ahistorical thinking which sees the return of nature to the city as a uniquely contemporary development,” arguing “*that different modes of urban development facilitate different framings of environmental problems and solutions*” (p. 2212, emphasis the authors’). Their point is well-taken and is a fundamental reason that the present issue has come together: to investigate instances of urban–environmental relations in societies through time.

Angelo and Wachsmuth’s call for a historically situated urban sustainability paradigm engages a concept that is only roughly 50 years old. But in another paper Wachsmuth (2012) argues that behind the underlying sustainability concerns are age-old questions about the relationship between “urban” and “nature.” In his view, to ask whether “cities” can save the “planet” is to counterpose two separately objective realities, when the fact is that sustainability thinking for this age will require imagining more than ever the “natural” within the “urban” and the reach of the “urban” into the “natural.”

Relations between the “urban” and “nature” have varied over time, and so has the valuation of what is saving what (Williams, 1975). The “city” is not only a “site;” it is also part of an urbanizing “process” (Hershberg, 1981). Some urban scholars have questioned how helpful it is to separate the “urban” from broader questions of the space-economy of society itself (Webber, 1964; Abrams and Wrigley, 1979). The “city” as a built entity stands in various relations and estimations with the surrounding countryside, at times walled off and at others, fluidly open legally, conceptually, and morphologically (Pirenne, 1925; Schorschke, 1963; Braudel, 1973; Tuan, 1978).

“Nature” has indeed been deliberately brought into the urban site, blurring its once rigid distinction from “city.” “Re-wilding” the city is now a global movement, after millennia of designing places to keep wilderness at bay. In contrast to standard western ecological restoration methods aimed at particular species or systems, the concept of re-wilding focuses on creating and maintaining dynamic ecological processes to strengthen urban resilience (Lehmann, 2021). Both the approach and the goals are more flexible than standard methods because the emphasis is on creating as much green space as possible at multiple scales and on a range of land-use types. This approach softens the nature/people dichotomy by providing spaces that act both as functional habitat for wildlife and increase access to nature for the surrounding human community.

Decision makers are responding to the crises of mass extinction and climate change by embedding sustainability targets within planning processes (Aalto and Ernstson, 2017). Current discourse is increasingly framing these non-utilitarian encounters with nature as providing value (counted as “ecosystem services”) to inhabitants. Examples proliferate where adjustments have been made to make city spaces habitable for non-human species, as in the case from our own Museum’s experience in advocating for a “lights out Chicago” program to accommodate seasonal bird migration.

In this context, and deploying Angelo and Wachsmuth (2020)’s point *that different modes of urban development facilitate different framings of environmental problems and solutions* over time, we would note how history can inform a frame for three critical issues in the contemporary phase of urban development:

1. While cities were often seen historically as either “virtue” or “vice” (Schorschke, 1963), we need evidence of where and how

cities foster sustainability. We need on-the-ground examples along with, or instead of, value statements.

2. The relationship between “city” and “nature” is always on the cusp of change, including how the city operates *in* nature and what nature there is *in* cities. In the same way that the question of sustainability arose from concerns brought to the fore beginning in the 1960s, so, too, do questions of biodiversity decline and habitat loss. Are there moments in the history of cities where the site itself has been designed to enable features that provide habitat for “wild” species deemed desirable, either for their intrinsic value or to produce enjoyable encounters with residents?
3. While the look back at the relations between city and nature is frequently tinged by nostalgia, a clear-eyed understanding of history is applicable today, as both critique and a form of cultural connectedness with the past. How “everyone” thinks that cities can save the planet is a question being aggressively asked today, and demands for equitable community participation and engagement are growing (Gould and Lewis, 2016). Building both a sense of place and local empowerment are core sustainability principles (Newman, 2008, p. 4).

Greater attention needs to be given both to the relationship between urban humans and non-human beings, and also to how historically marginalized residents contribute to culturally relevant urban design. We now briefly review how biodiversity, community engagement, and heritage concerns have become central to the urban sustainability dialogue.

2. Biodiversity, heritage and sustainability in contemporary cities

2.1. The rise of the biodiversity concern

The term “biodiversity” itself dates only to the late 1980s, independently by three different users, but such is the attractiveness of the term to current issues that it quickly entered wide circulation (Sarkar, 2021). In “urban” circles, it was well-established within 5 years (Platt et al., 1994). The 1995 establishment of the Chicago Region Biodiversity Council (more commonly known as the “Chicago Wilderness Alliance”) was one of many ways in which the term was deployed in public policy (Packard, 2005). Such efforts built on a longstanding tradition in urban planning and design, extending as far back as the urban parks, Garden Cities, and suburbanization movements of the nineteenth century and the burgeoning discipline of urban planning in the early 20th century (Creese, 1966; Jackson, 1985; Cranz, 1989). Spurred by the environmental crisis of the 1960s, a new strain of planning began to “design with nature” (McHarg, 1969; Spirm, 1984).

Biodiversity concepts have not been as quickly picked up by disciplines such as urban history and archeology. Environmental history became a central concern for historians in the late 1960s and grew rapidly so that by the 1990s it had arguably come of age. It took longer for a specific “urban environmental history” to get established; a review published in 2000 refers to “biodiversity” only once (Keyes, 2000, p. 389). A recent call for the “development of a new interdisciplinary research effort to establish scientific understanding of settlement and settlement system persistence” to inform current

sustainability practice contains no references to biodiversity (Smith et al., 2021, p. 1).

Recently, the global concern with species diversity has prompted investigation of the current biodiversity value of ancient sites, especially as distributed sources of data for the assessment of long-term human impacts on the environment (Hambrecht et al., 2020). Archeologists are particularly well-positioned to assess the “success” or “failure” of ancient practices, and some are now directly connecting their investigations of the past to contemporary discussions of sustainability (Woolf, 2020; Smith et al., 2021; Barkin, 2022; Bergemann and Rempe, 2022). Deep-time researchers are actively examining practices in pre-Columbian agriculture (Smith et al., 2021; Prümers et al., 2022), aboriginal fire management, and Middle Eastern water infrastructure to provide guidance for modern practices to mitigate biodiversity loss and climate change impacts (Boivin and Crowther, 2021). Recent research has specifically linked deep-time study with biodiversity concerns within the urban frame itself (Mychajliw et al., 2022). A new “Ancient Environments” monograph series highlights studies of equids in the Ancient Near East (Recht, 2023), trees in ancient Rome (Fox, 2023), and boundaries in Roman gardens (Austen, 2023).

2.2. Biodiversity and sustainable cities

As we have seen, by the early 21st century cities were increasingly seen as the “solution” to problems of environmental crisis, climate change, and rapid urbanization. The 1990s was a vigorous time for international coordinated effort on these issues, with the development of the 1992 Rio Conventions on Climate Change, Biological Diversity, and Combating Desertification and the creation of Agenda 21 for Habitat and Millennium Development Goals. The BiodiverCities by 2030 program challenges cities to assume greater leadership in tackling the interconnected biodiversity and climate crises through “nature-positive investments” (Mejía and Amaya-Espinel, 2022). In 2003, the board of the “International Council for Local Environmental Initiatives” (ICLEI) voted to rename itself “ICLEI – Local Governments for Sustainability,” to indicate its readiness to forward urban sustainability principles, especially those agreed to at a 2002 ICLEI and United Nations Environment Program (UNEP) charette in Melbourne.

These 10 “Melbourne principles” have become the touchstone for the urban sustainability movement (UNEP, 2002). The principles are embedded in interpenetrating spheres of urban life, each of them seen as essential to creating “cities as sustainable ecosystems” (Newman, 2008). Our concern in this paper is especially focused on principle 3, which states: *Recognise the intrinsic value of biodiversity and natural ecosystems, and protect and restore them.* But our work also holds that this biodiversity principle is unattainable without attention to two other key principles: 6, concerning “heritage” – *Recognise and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems,* and 7, concerning “participation” – *Empower people and foster participation.* Diverse community participation is a prerequisite for robust, durable, and equitable processes that lead to biodiversity conservation. The latter has strong roots in social and urban planning movements of the 1960s to advance “maximum feasible participation” (Arnstein, 1969). “Heritage” and “participation” come together in what Low et al. (2005, p. 5) call “social sustainability,” which “refers to maintaining and enhancing the diverse histories, values, and relationships of contemporary populations.” Evidence suggests that a well-developed

“social infrastructure” is a necessary precondition for “green infrastructure” projects to ultimately succeed (Amin, 2008; Klinenberg, 2018; Latham and Layton, 2019). “Heritage,” “participation,” and “biodiversity” are compellingly drawn together by Hernandez-Santin et al. (2023) and summarized in Figure 2.

We reviewed a selection of recent urban plans to see how the “ladders” have come into play. Not surprisingly, in Cairo, Dakar, and Lima, even plans that speak to being “green” and sustainable tend to place “biodiversity” and “heritage” in their formally designated sites within the metropolitan space, not as vital components of urban life itself (Cairo Future Vision 2050, 2009). These cities, in the Global South, face significant issues of resource constraints, rapidly rising population, national metropolitan network imbalances that create severe growth challenges for capital cities, and continuing economic and cultural legacies from colonialism. Cities like Melbourne and Los Angeles in the Global North, on the other hand, devote significant attention to these issues, perhaps because their plans were more recently completed (Chan et al., 2021). The Melbourne Plan’s notion to “stimulate economic growth through heritage conservation” and “protect Melbourne’s heritage through telling its stories” moves closely in the direction we are advocating and best lines up with the Chicago cases we draw from in this article (Victoria State Government, 2017).

2.3. South Side Sankofa

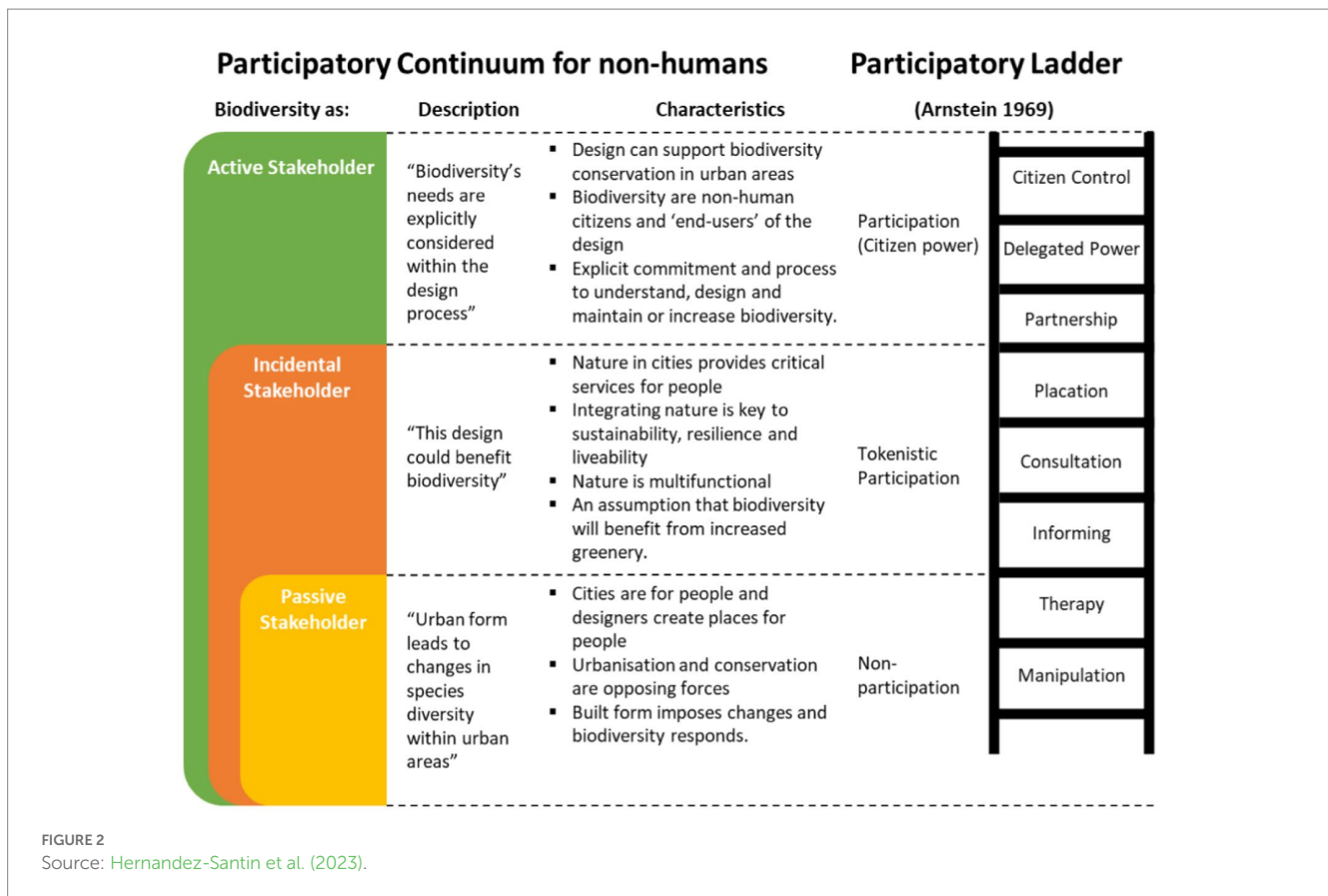
In 2010, Chicago Park District (CPD) began removing the dense thicket of weedy plants between railroad tracks and south Lake Shore Drive, renaming it the Burnham Wildlife Corridor (BWC). CPD’s ecological restoration objective was to create a native oak-dominated woodland that provides habitat for migratory birds, pollinators and other wildlife. In 2015, Field Museum worked with CPD to partner artists with community organizations to build public art gathering spaces in the BWC. *Sankofa for the Earth* was one of five Gathering Spaces that integrated culturally resonant environmental themes with the ecological story of this changing landscape.

Bronzeville residents participated in tree planting events and public art projects that shaped the BWC, highlighting the determination to ensure that their histories associated with this place were not scrubbed away with the weeds and garbage as instances of green gentrification (Checker, 2020; Schusler et al., 2023). Community leaders have demanded that a Great Migration Trail be designated in the BWC and that young people gain experience in it to launch environmental careers.

Such heritage-based place-making fosters a key sustainability objective for the years to come; it elevates a level of place attachment that builds resilience in the face of both gentrification and out-migration. Valuing locations in the urban core offsets suburban land use conversion, biodiversity loss, increased vehicle miles traveled, and new material and energy inputs to supply new neighborhoods in favor of re-use of established locations. In short, the heritage-based strategy is also a climate resilience strategy.

3. Discussion

In this article we have sought to refresh the dialogue about the relationship between “cities” and “nature” by summarizing current discourse about sustainable cities, especially as it



integrates biodiversity and a commitment to heritage-based placemaking. We anticipate that emergent scholarship on the role of nature in ancient cities will shed valuable light on current sustainability work.

We argue that urban sustainability will be improved when it supports and elevates heritage-informed nature-based solutions that animate public life in city neighborhoods. These terms deserve further scrutiny, serving as departure points for research and practice:

- “Nature”: How biodiverse were ancient cities? How species rich? Did invasive species play a role? Were spaces formally dedicated for “nature”?
- “Nature-based solutions”: What evidence or inferences exist for the intentional incorporation of nature in urban design – in their morphology, their distribution and use of space, their ornamentation? How did urban dwellers frame “nature”: as a problem or solution, as ornament or necessity, as a presence or as an absence?
- “Heritage-informed”: What evidence exists for gestures toward the “use” of the past in constructing the physical frame for urban life?
- “Public life”: Who was the “public” and who spoke for it? Who claimed use of public space? What was the balance between public and domestic space? To what extent did nature figure into that balance? How was this use of space “coded” by gender, occupation, class, duration of residency?
- “City neighborhoods”: Can inferences be made about how ecosystem services were allocated by markers such as wealth,

status, occupation, or ethnicity? What evidences exist for communitarian traditions that occurred side by side with the city’s broader role as a center of surplus extraction?

- “Urban sustainability”: This is perhaps the most critical question: to what extent did the success or failure of prior urban assemblages or urban-centered civilizations relate to the degree to which “nature” was incorporated into the body and practice of urban life? Did the existence or lack of biodiversity play any role in the long-term sustainability of a particular city or urban civilization?

To pose these questions makes plain our perspective that more biodiversity is better than less, and more community empowerment is better than less. While we strive for the highest rungs on the ladders of participation and biodiversity, and reflect on Sankofa, what does the past tell us as we look to our future on the planet?

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Field Museum IRB Committee, Lisa Niziolek lead. The

patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

JC, MB, AC, and ADL contributed to the conception and design of the project. JC and MB wrote the first draft of the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

- Aalto, H. E., and Ernstson, H. (2017). Of plants, high lines and horses: civic groups and designers in the relational articulation of values of urban natures. *Landsc. Urban Plan.* 157, 309–321. doi: 10.1016/j.landurbplan.2016.05.018
- Abrams, P., and Wrigley, E. A. eds. (1979). *Towns in societies: Essays in economic history and historical sociology*. Cambridge: Cambridge University Press.
- Amin, A. (2008). Collective culture and urban public space. *City* 12, 5–24. doi: 10.1080/13604810801933495
- Angelo, H., and Wachsmuth, D. (2020). Why does everyone think cities can save the planet? *Urban Stud.* 57, 2201–2221. doi: 10.1177/0042098020919081
- Arnstein, S. R. (1969). A ladder of citizen participation. *J. Am. Inst. Plann.* 35, 216–224. doi: 10.1080/01944366908977225. hdl:11250/2444598
- Austen, V. (2023). *Analysing the boundaries of the ancient Roman garden: (Re) framing the Hortus*. London: Bloomsbury Publishing, doi: 10.5040/9781350265219.
- Barkin, D. (2022). Shaping a communitarian ethos in an era of ecological crisis. *Front. Sustain.* 3:944252. doi: 10.3389/frsus.2022.944252
- Bergemann, J., and Remppe, M. (Eds.). (2022). The Ancient City and Nature's economy in magna Graecia and Sicily: panel 2.1, Heidelberg: propylaeum. *Archaeology and economy in the ancient world – Proceedings of the 19th international congress of classical archaeology, Cologne/Bonn 2018*.
- Boivin, N., and Crowther, A. (2021). Mobilizing the past to shape a better Anthropocene. *Nat. Ecol. Evol.* 5, 273–284. doi: 10.1038/s41559-020-01361-4
- Bouman, M. J. (2020). "The Calumet region: a line in the sand" in *City of lake and prairie: Chicago's environmental history*. eds. K. A. Brosnan, A. D. Keating and W. C. Barnett (Pittsburgh: University of Pittsburgh Press), 286–300.
- Braudel, F. (1973). *Capitalism and material life*. New York: HarperCollins.
- Cairo Future Vision 2050 (2009). Vision of Cairo 2050 within a national vision of Egypt. Available at <https://cairofrombelow.files.wordpress.com/2011/08/cairo-2050-vision-v-2009-gopp-12-mb.pdf>
- Campbell, J., Jarrett, C., Wali, A., Rosenthal, A., Alvira, D., Lemos, A., et al. (2023). Centering communities in conservation through asset-based quality of life planning. *Conserv. Soc.* 21, 48–60. doi: 10.4103/cs.cs_146_21
- Chan, L., Hillel, O., Werner, P., Holman, N., Coetzee, I., Galt, R., et al. (2021). *Handbook on the Singapore Index on Cities' Biodiversity (also known as the City Biodiversity Index)*. Montreal: Secretariat of the Convention on Biological Diversity and Singapore: National Parks Board, Singapore.
- Checker, M. (2020). "Wiped out by the green wave" in *The sustainability myth* (New York: New York: University Press), 49–83.
- City of Los Angeles (2019). pLAn. L.A.'s Green New Deal. Sustainability plan 2019. Available at: <https://plan.lamayor.org/>
- Cohen-Shacham, E., Walters, G., Janzen, C. C., and Maginnis, S. eds. (2016). *Nature-based solutions to address global societal challenges*. Gland, Switzerland: IUCN.
- Cranz, G. (1989). *The politics of park design: A history of urban parks in America*. Cambridge, MA: MIT Press.
- Creese, W. (1966). *The search for environment: The Garden City before and after*. New Haven: Yale University Press.
- Daseking, W. (2015). Freiburg: Principles of sustainable urbanism. *J. Urban Regen. Renew.* 8, 145–151.
- Derby Lewis, A., Bouman, M., Winter, A., Hassle, E., Stotz, D., Johnston, M., et al. (2019). Does nature need cities? Pollinators reveal a role for cities in wildlife conservation. *Front. Ecol. Evol.* 7:220. doi: 10.3389/fevo.2019.00220
- Drake, S., and Cayton, H. (1945). *Black metropolis: A study of negro life in a northern city*. Chicago, IL: University of Chicago Press.
- Fox, A. (2023). *Trees in Ancient Rome*. London: Bloomsbury Publishing.
- Gould, K. A., and Lewis, T. L. (2016). "Green gentrification and Hurricane Sandy: the resilience of the green growth machine around Brooklyn's Gowanus Canal" in *Taking chances: The coast after Hurricane Sandy*. eds. K. M. O'Neill and D. J. van Abs (New Brunswick: Rutgers University Press).
- Hambrecht, G., Anderung, C., Brewington, S., Dugmore, A., Edvardsson, R., Feeley, F., et al. (2020). Archaeological sites as distributed long-term observing networks of the past (DONOP). *Quat. Int.* 549, 218–226. doi: 10.1016/j.quaint.2018.04.016
- Hernandez-Santin, C., Amati, M., Bekessy, S., and Desha, C. (2023). Integrating biodiversity as a non-human stakeholder within urban development. *Landsc. Urban Plan.* 232:104678. doi: 10.1016/j.landurbplan.2022.104678
- Hershberg, T. (1981). "The new urban history: Toward an interdisciplinary history of the City" in *Philadelphia: Work, space, family, and group experience in the nineteenth century*. ed. T. Hershberg (Oxford: Oxford University Press).
- Jackson, K. (1985). *Crabgrass frontier: The suburbanization of the United States*. New York: Oxford University Press.
- Keyes, J. (2000). A place of its own: urban environmental history. *J. Urban Hist.* 26, 380–390. doi: 10.1177/009614420002600308
- Klinenberg, E. (2018). *Palaces for the people: How social infrastructure can help fight inequality, polarization, and the decline of civic life*. New York, NY: Crown.

- Latham, A., and Layton, J. (2019). Social infrastructure and the public life of cities: Studying urban sociality and public spaces. *Geogr. Compass* 13:e12444. doi: 10.1111/gec3.12444
- Lehmann, S. (2021). Growing biodiverse urban futures: renaturalization and rewilding as strategies to strengthen urban resilience. *Sustainability* 13:2932. doi: 10.3390/su13052932
- Low, S., Taplin, D., and Scheld, S. (2005). *Rethinking urban parks: Public space and cultural diversity*. Austin: University of Texas Press.
- McHarg, I. (1969). *Design with nature*. New York: Wiley.
- Mejía, M. A., and Amaya-Espinel, J. D. eds. (2022). *BiodiverCities by 2030: Transforming cities with biodiversity*. Bogotá: Alexander von Humboldt Biological Resources Research Institute.
- Ministry of Urban Renewal, Housing and Living Environment, Republic of Senegal and Japan International Cooperation Agency. (2016). Project for Urban Master Plan of Dakar and Neighboring Area for 2035. Available at: https://openjicareport.jica.go.jp/pdf/12250007_01.pdf
- Mychajliw, A., Ellwood, E., Alagona, P., Anderson, R., Balisi, M., Biber, M., et al. (2022). Lessons for conservation from beneath the pavement. *Conserv. Biol.* 36:e13983. doi: 10.1111/cobi.13983
- Newman, P. (2008). *Cities as sustainable ecosystems: Principles and practices*. Washington, DC: Island Press.
- Packard, S. (2005). "Chicago wilderness" in *Encyclopedia of Chicago*. eds. J. Reiff, A. Keating and A. Grossman (Chicago: Chicago Historical Society), 328.
- Pirenne, H. (1925). *Medieval cities: Their origins and the revival of trade*, trans. F. Halsey. Garden City, NY: Doubleday and Co.
- Platt, R., Rowntree, R., and Muick, P. (Eds.). (1994). *The ecological city: Preserving and restoring urban biodiversity*. Amherst: University of Massachusetts Press.
- Prümers, H., Betancourt, C. J., Iriarte, J., Robinson, M., and Schaich, M. (2022). Lidar reveals pre-Hispanic low-density urbanism in the Bolivian Amazon. *Nature* 606, 325–328. doi: 10.1038/s41586-022-04780-4
- Recht, L. (2023). *The spirited horse*. London: Bloomsbury.
- Sarkar, S. (2021). Origin of the term biodiversity. *Bioscience* 71:893. doi: 10.1093/biosci/biab071
- Schorschke, C. (1963). "The idea of the City in European thought: Voltaire to Spengler" in *The historian and the City*. eds. O. Handlin and J. Burchard (Cambridge, MA: MIT Press), 95–113.
- Schusler, T. M., Krings, A., and Melstrom, R. T. (2023). Experiences with environmental gentrification: evidence from Chicago. *Landsc. Urban Plan.* 236:104765. doi: 10.1016/j.landurbplan.2023.104765
- Smith, M., Lobo, J., Peebles, M., Yora, A., Stanley, B., Crawford, K., et al. (2021). The persistence of ancient settlements and urban sustainability. *PNAS* 118:e2018155118. doi: 10.1073/pnas.2018155118
- Spirn, A. (1984). *The granite garden: Urban nature and human design*. New York: Basic Books.
- Tuan, Y. (1978). The city: Its distance from nature. *Geogr. Rev.* 68:1. doi: 10.2307/213507
- Turnbridge, J.E., and Ashworth, G. (1996). *Dissonant heritage: The management of the past as a resource in conflict*. Chichester, NY: John Wiley and Sons.
- UN Habitat (2017). Lima's green infrastructure (GI) master plan. (2017). Available at: https://unhabitat.org/sites/default/files/download-manager-files/PLAM2035_150614.pdf
- UNEP (2002). *Melbourne principles for sustainable cities. (Integrated Management Series No.1)*. Osaka: UN Environmental Program, Division of Technology, Industry & Economics.
- Victoria State Government (2017). Plan Melbourne, 2017–2050. Available at: <https://planmelbourne.vic.gov.au/home>
- Wachsmuth, D. (2012). Three ecologies: urban metabolism and the society-nature opposition. *Sociol. Q.* 53, 506–523. doi: 10.1111/j.1533-8525.2012.01247.x
- Webber, M. W. (1964). "The urban place and the non-place urban realm" in *Explorations into the urban structure*. ed. M.W. Webber (Philadelphia: University of Pennsylvania Press).
- Williams, R. (1975). *The country and the City*. New York: Oxford University Press.
- Woolf, G. (2020). *The life and death of ancient cities: A natural history*. Oxford: Oxford University Press.