Preface and acknowledgments

One can hardly be sanguine about the fate of the Earth and the prospects of humankind flourishing over the remainder of the twenty-first century, given the many challenges facing socio-nature as a result of the continuing forces of technological modernity and the palpable threats stemming from the proliferation of neo-liberalism and right-wing populism across much of the West. Yet the resources of hope reside around us, often in the most unexpected places that blend threat and promise, if we but look for them.

This book is in many respects the culmination of over thirty-five years of collaboration between a political scientist and an urban architect. Having initially crossed paths on the quadrangle of the University of Kentucky in the early 1980s, Richard S. Levine and I launched a conversation about the pressing need for the world to achieve sustainability and the role of the city as the space and place for bringing this goal to realization—a conversation that continues today. Little did we think then that that initial colloquy would animate our theoretical, design, and policy efforts through the remainder of our academic careers and into our individual retirements.

Levine was the first to turn attention to China as a laboratory for advancing sustainability, playing a crucial role in the writing and selection of a multi-million dollar grant proposal, funded by the European Commission (project number: FP ICA4-CT-2002-10007). Titled “Sustainable Users Concepts for China Engaging Scientific Scenarios (SUCCESS),” this grant, awarded to Oikodrom—the Vienna Institute for Urban Sustainability—and the project team, provided funds to conduct interdisciplinary research and sustainability-oriented projects with rural villagers in seven Chinese peri-urban and rural settlements in six different provinces in China. Many of the tools of the strategy of sustainable city-regions (multiple scenario-building, expert-stakeholder participation, the Sustainable Area Budget, etc.) were utilized by Levine and other team members in these proto-sustainable settlements.

Yanarella’s introduction to China’s sustainability programs occurred in 2013 when he taught a course on urban sustainability to undergraduates in Shanghai University’s short summer program and then was invited back the following summer (2014) to teach an undergraduate course on urban and water sustainability. These experiences led to inaugurating a course in summer 2015 and then again the next summer on Shantou as a living laboratory for sustainability solutions to advanced undergraduates at Shantou University

in Guangdong Province in southern China. Shantou's urban context, in contrast to Shanghai, proved felicitous in assimilating the contradictory drives and varying fortunes of China as a developing nation. These four summers also opened Yanarella to the accumulating bodies of literature in the social sciences on China's bid to become an ecological civilization and its feverish construction of eco-cities across its landscape. After stepping down from the chairship of the department of political science at the University of Kentucky, he embarked upon a year-long sabbatical project beginning June 2017 that provided the time, the funding support, and the opportunity to do fieldwork in the five eco-cities forming the case studies for this book.

I (Yanarella) wish to express my deep gratitude to the institutional sources of that financial support for the fieldwork and writing of this book. To the University of Kentucky Confucius Institute and the Chinese Confucius Institute, I offer my sincere thanks for selecting me as one of nine other scholars worldwide to be awarded the Elite Collaborative Research Grant. This generous grant not only allowed me to perform fieldwork at two of the five eco-city sites—Suzhou and Wuxi—but brought me into a collaborative relationship with Lu Chao, then assistant professor and now associate professor in Shanghai University's Department of Management and Engineering. I owe a debt to Dr. Huajing Maske, Executive Director of the UK Confucius Institute (UKCI), for her unswerving support for my work on sustainability in China, as well as her constant encouragement to me regarding the Institute's many teaching and research opportunities. Under her adept leadership and administration, the UKCI has been selected as "Confucius Institute of the Year" in 2012, 2015, and 2017.

I also wish to express my deep appreciation to the Office of Dean of the College of Arts and Sciences and specifically Dean Mark Kornbluh. In addition to granting me a full-year sabbatical upon concluding my six years of the departmental chairship, Dean Kornbluh awarded me a \$5,000 research grant to help subsidize my sabbatical fieldwork and supplementary research. Likewise, I am grateful to the Associate Provost for Internationalization at the University of Kentucky—Dr. Susan Roberts—for a \$2,500 grant to fund travel and field study to further my sabbatical project. Without these sources of support, the on-site research underpinning this book would have been difficult, if not impossible.

Foremost among the many individuals who contributed to this book are: my co-author, Dick Levine; Chinese research collaborator, Lu Chao; my spouse, Elizabeth W. Yanarella; and my teaching and research assistant, Rachel Lietzow. When a political theory/critical policy studies professor and an urban architect work together on a major project, one should naturally expect both productive insight and intellectual contestation over disciplinary perspectives. One of us centers his attention on politics, power, and policy; the other, on

spatiality, design, and architectonic outlook. The discerning reader will find places where something of a pull-and-tug between the co-authors takes place, even covert quarrels, over some ideas and concepts. What unites us is our unflagging commitment to strong sustainability and the hope and possibility of sustainable city-regions as crucial means to building global sustainability. At a time when so-called green, resilient, and regenerative alternatives to sustainability have been promoted as more practical and concrete vehicles for overcoming portentous global challenges of unsustainability, natural resource depletion, and global warming, Dick and I continue to be insistent and unyielding voices for a theory and strategy that remains ensconced in a concept and vocabulary inaugurated or contributed to by the work of Herman Daly, William Rees, and Mathis Wackernagel, the authors of the Club of Rome, and our early work. Even as hope is being eroded by a darkening mood of cynicism, fatalism, and despair among former torchbearers of sustainability and a happy consciousness of hyper-specialization among professional career builders, we continue to press for a space and place for sustainable city-regions in the belief that once planted and allowed to flower, they can—and will—flourish.

Lu Chao's collaboration and generosity were absolutely essential in launching my sabbatical work. His interests in the circular economy and low-carbon cities were what attracted me to him as my research partner as part of the Confucius Institute's Elite Collaborative Research Grant program. Chao's specialization in management and engineering, rather than an obstacle, proved a vital asset in advancing our individual and joint work. Besides writing two research papers, he and I guest co-edited and contributed an essay to a special issue of *Sustainability: The Journal of Record*, on Chinese sustainability initiatives. Chao was especially generous of his time, personal funding, and scholarly assets, loaning me two research assistants to accompany me on the first phase of my sabbatical research in Suzhou and Wuxi. Without their language translations and multiple battles with Chinese administrative bureaucrats to open the doors to key sites in these two eco-districts, Chapter 3 of this book would have been much poorer.

My gratitude to my wife, Elizabeth, is legion. She joined me on all of the fieldwork in China, bringing her musical talent on the Chinese two-string violin (*erhu*) and growing command of the Chinese reeded gourd instrument (*hulusi*) that not only entertained surprised onlookers in public and market places in China where she periodically played, but reminded me many times over during these trips to China that music is a universal language across all nations and cultures. She also used her Chinese language learning and sociality to good effect with taxi drivers, food servers, and other Chinese inhabitants who crossed our paths and leavened our experience as neophyte tourists enjoying the cultural assets of the Chinese cities we visited. In widening her knowledge of Chinese art, architecture, and music, she broadened mine, too.

It was my good fortune that my colleague Horace Bartilow recommended to Rachel Lietzow that she contact me to continue her China studies in her senior year and my last year of teaching during the 2018–2019 academic year. A native of Hong Kong and someone who is self-taught in Mandarin and Cantonese, Rachel proved to be an absolute treasure. Having generated a summer reading list and purchased books for her while she was interning in the China division of the US State Department, I offered her an undergraduate RAship in the fall semester, where she carefully read and copyedited a draft of what would become this book. The following semester, she accepted a TAship to assist me in a special topical seminar on the politics and environmental challenges of the People's Republic of China. In those responsibilities, she excelled in providing cogent advice and valuable correctives to Dick's and my developing book manuscript, saving us from leaving embarrassing errors in this book's text. She also used her razor-sharp proficiency in Mandarin to reveal subtle meanings of Chinese words and names that deepened my appreciation of Chinese cultural and religious traditions. In our weekly independent reading courses, I was especially impressed by her many intellectual talents and her drive and work ethic. I was also personally pleased that my dozen or so letters of recommendation played a small part in the host of university undergraduate awards, fellowship offers, and multiple admissions to the top university Chinese studies programs she garnered. I can only hope for sufficient longevity to trace the arc of her career beyond her graduate studies. Her contributions to this book were gifts to me and harbingers of great things to come, whatever profession she chooses.

Stanley Brunn, now retired geography colleague and continuing global researcher and instructor, was invaluable in connecting me to his fellow and sister geographers at Yunnan Normal University in Chenggong eco-district of Kunming. Dr. Zhu Jinghong was particularly helpful in orienting me to Chenggong and providing me with graduate student assistance during my fieldwork there.

My teaching at Shantou University and subsequent research in Shantou itself was greatly enhanced by the enormous help of former Dean of the College of Liberal Arts, Dr. Terry Bodenhorn, and his assistant, Manyao Zheng. Not only teaching a parallel course on China's environmental history for two summers and mutually sitting in on each other's courses each time, Terry augmented my knowledge of China's environmental crises in air, water, and land and helped me prepare to teach my own course on the politics of China's environmental problems and proposed ecological solutions in my last semester before retirement at my home institution during spring 2019. Both Terry and Manyao worked vigilantly to make my sabbatical fieldwork in Shantou productive against the vicissitudes involved in my trying to interview local principals in urban planning on the occasion of the 19th Party Congress

while government officials and urban planners were virtually frozen in their inaccessibility to Western scholars while waiting for the outcome of program and policy decisions from their national leaders. I also wish to thank Lauren Zhang for serving as my research assistant and assisting me in translating key Chinese documents pertinent to Shantou's strategic plan. Her language proficiency in Mandarin, Chaoshan (Shantou area's local dialect), and English was invaluable in understanding the promise and limitations of Shantou becoming an eco-garden city.

Much of the writing and revising of my part of the book took place at the local Starbuck's in my hometown of Versailles, Kentucky. The many baristas whom I became acquainted with there were supporters and cheerleaders of this project and its importance. They also made damn good skinny vanilla lattes! Over the time I got to know them, I came to see them as young people with the hopes and desires of all of us who are striving to make a living, extend our education, find a job, grow a family, be good citizens, and live in and make a better world not plagued by mass shootings, an ecosystem threatened by the specter of climate change, a polarized politics, social injustice, and income and wealth inequality. They are in the process of inheriting the world my generation contributed to making; I can only hope that they may find in this book Dick's and my contribution to the foundations of that better world he and I have sought to advance in our professional and political lives. Farrah Devers, Morgan Carlson, Lexi Lafoe, Kyla Simpson, Anna Cox, Lucianna Miele, Garit Samples, Tiphany Sandoval-Garsia, Lexi Braswell, Rebecca Curry, Mackenzie Cox, Grantly Preece, Bianca Genovese, Jenny Carano, Makenzie Delmonico, Audrey Henderlight, Carrie Howard, Abi Lewis, Julia Serrano, Amberly Serrano, Kaylee Snow, Bob Tankersly, McKenna Toomey, Bryan Wayman, and Jay Willis—thank you all!

Finally, I would like to offer my thanks to the many eco-scholars—European, North American, and Chinese—who have dedicated their professional lives to studying China's ecological civilizational project and the larger objective of global sustainability. If we are sometimes critical or impatient with some of them for what appears as placing careerism above forging local-global sustainability, we need only remind ourselves of the formidable obstacles at every scale that continue to thwart the only meaningful political agenda worthy of tackling those impediments. We should also be cognizant of—and moved by—the deeper personal-political truth offered by Albert Camus at the end of his book *The Rebel*: “by your action or inaction you too shall enter the fray.”

[Levine] It took Nature a billion years of continuous experimentation to discover her own laws and, following those laws, to generate life on planet Earth. It took Nature another three and a half billion years through its gathering ecosystems, to evolve a species that was able—for a time—to operate

outside those rules at the expense of the health of those ecosystems for their own short-term benefit. Humans are the only species that has both been able to operate outside Nature's rule and the only one able to recognize the longer-term consequences of doing so. Humans in their turn, over just a few hundred years, experimented to create an economic system aimed at concentrating Nature's bounty and degrading her wealth. That system now exists in a brief moment of this extraordinary history when humans will have made the decision whether to continue following those new rules that have brought them to those heights or to slightly change their own rules to better correspond to those of Nature.

For my perspective, this book is about an extraordinary experiment under way in China that could well become the first act in a process that won't be seen as either Nature or Economics. It's an aspiration that is being called "Ecological Civilization" and its intended vehicle is being called the Eco-city. Already 285 of them are in various stages of completion in China. As a concept, eco-cities won't be nearly enough, but as the experimentation continues, how it negotiates its second act will become critical. This book is a study and critique of the first act still in its formative stages and also a proposal for the second act that if followed could well establish a viable return to Nature's rules for our small planet and humankind's realization of an Ecological Civilization.

From my earliest years as a student of built form, my learning, teaching, and practice over more than fifty years have involved the pursuit of architecture as process. I have long believed that the education of an architect contains the seeds of a process that would be uniquely suited to the complex *problematique* of sustainability—a process that could be found nowhere else. Thirty years ago, I gave a public lecture in Vienna on the Sustainable City, introduced by the city's vice mayor who in his postscript wisely said, "The problem with Sustainability is that no one owns the problem." Indeed, although aspects of sustainability are to be found not only in virtually every branch of city administration, but throughout urban culture as well, there is nowhere that sustainability is able to exert a dominant role or become a major framework for decision making. While the various values of sustainability appear as factors in programs in nearly every sector, serving to lower the impact of an essentially inequitable and unsustainable economy and culture, they largely function to alleviate local, short-term imbalances; but even as they relieve those pressures in the short term, they generally act to block long-term, large-scale urban sustainability processes. Such progress has been accurately typified as winning short-term battles and losing the long-term war.

Yet long-term planning too has largely been discredited in recent decades owing to its technocratic and often reductionist basis and its overall weak performance. This is so more importantly because planners have had little access to principles or tools to practice strong sustainability-based planning. Instead, continuing pressure has led them to yield to the political strengths of wealth

and power rather than pursuing a defensible path to orient their planning for the benefit of a town, its inhabitants, and its future prosperity.

It is well to leave many of the systems and their details to the experts and specialists, but those systems are rarely neutral because their foundations rest largely on supporting and maintaining the unsustainable status quo. This condition is not even a steady-state condition, but rather an unsustainable drift driven by what amounts to an unsustainable growth machine. If this is the case, what we have termed “weak sustainability” means that, by improving underlying systems growth and natural resource depletion, whether in terms of provisioning (food, water, transportation, etc.) or services (banking, financing, commerce, etc.), one is likely to be merely extending the life of a fundamentally unsustainable system in the name of weak sustainability, instead of advancing sustainability-oriented components or systems.

The other impediment to sustainability is the burden shouldered by urban dwellers expressed in the form of the minutiae of urban metabolism, functioning and decision making. In principle, city dwellers generally seem happy to pass on their decision making capacity to elected representatives, who make the rules that executive officers use to administer to and manage the urban city-system. Citizens often become agitated, however, when they feel entirely excluded from urban policy making and planning, especially when such a system increasingly favors the interests of the rich and powerful at the expense of the opportunities and living quality of the larger populace. The resolution to this dilemma lies in finding ways of empowering the normal citizen through various participatory means.

Although I am a slow learner, time has been on my side. I owe much of the progress I have made over the years to a multitude of students to whom I owe a great debt and from whom I have gained enormous joy in introducing them to design methods that lead them onto the path described above and represented in ideas presented in the body of this book and illustrated in projects highlighted in the book’s appendix. The joy comes from seeing fumbling novices develop their tolerance for enduring mistake-after-mistake finally culminating in constructing themselves into accomplished designers in their successful attempts at sustainability-oriented building design and the realization of sustainable urban design. The process has been similar for me as I have also struggled while teaching in a school that valued “high design,” in the sense of favoring architectural “form-making” over a more embracing definition of architectural design driven by societal issues and, in particular, by sustainability issues. This long quest crystallized, for me, in both a field of inquiry considerably larger than architecture and a domain of transdisciplinary inquiry with clearer and more loosely structured boundaries. Along the way, I became increasingly convinced that the trial-and-error skills and the collaborative/competitive environment within which we develop them could well

become an excellent discipline for awarding a larger and far more important role for architecture than just designing buildings.

My influences have been many, including not only known architects, but the master builders of earlier times who built the wonderful cities and buildings of the past, as well as the master architects of the near present. In particular, I have learned from Frank Lloyd Wright, Aldo van Eyck, Bucky Fuller, Louis I. Kahn, Giancarlo de Carlo, and Olivio Ferrari. Strong sustainability exceeds the scale of the individual building, so I cannot lay at the feet of my mentors blame for limiting concerns to merely designing brilliant buildings with only weak sustainability leanings. In fact, we have yet to see the sort of interaction among building, public space, and city-region that must soon emerge in the form of the sustainable city-region. The hope is that this book may become a guide toward that realization.

I am also indebted to students—principally to Casey Ryan Mather and Michael T. Hughes—who have become colleagues in my own professional office and, for a time, helped to create a vibrant working relationship. I am greatly indebted to Taghi Radmard, my long time assistant and former student, an outstanding architect who has worked side by side with me on numerous projects over many years. “Tad” has done the inspiring Sustainable City-as-a-Hill drawings that are featured in the Appendix. I am especially indebted to Heidi Dumreicher, a former Austrian journalist, who through the force of her personality, brilliance, and persistence has carved out a remarkable research career with global projects as director of Oikodrom: The Vienna Institute of Urban Sustainability. One of her many contributions is the establishment, along with Bettina Kolb, of the concept of “emotional co-ownership” of both the sustainability process and the city-region that it would generate as an essential feature of any sustainability endeavor. Working with Heidi through many European research projects in China, the Middle East, Europe, and elsewhere has presented challenges, but always opportunities for growth.

Although our paths and backgrounds have been very different and, in many ways, full of possibilities for conflict, Ernest J. Yanarella and I have been collaborating for more than thirty-five years, finding ways to transcend the tensions between our disciplinary boundaries to generate stronger ideas. I believe that those ideas have achieved far greater complexity and nuance than either one of us could have generated on our own. This intellectual engagement and interpersonal adventure with such an accomplished scholar, great teacher, and humanitarian has been the singular pleasure of my intellectual career. Laura Alex Frye-Levine has shared and paralleled my engagement in sustainability. Perhaps my daughter’s greatest accomplishment to date has been the ways in which she has transcended the silos of three different disciplines—sociology, ecological economics, and architecture—by operating along the margins intersecting them. In so doing, Laura has “owned” a transdisciplinary understand-

ing of both the relationships and inherent conflicts among these disciplines, and the possibilities and opportunities stemming from knitting both critique and synthesis at their margins. This is not a comfortable terrain to occupy as the path of the whole overflows the strictures of the individual disciplines. Laura's tenacity and insights between parts and wholes, however, creates a sustainability framework that each of these disciplines badly needs in order to make their necessary contributions to sustainable city-regions.

Dick and I would be negligent if we failed to express our debt of gratitude to the administrative and production staff of Edward Elgar Publishing—Alan Sturmer, Katia Williford, Sue Sharp, and Sarah Brown—as well as to Jo North for her copyediting of the book ms. Thank you all!

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Map of China: five eco-cities studied