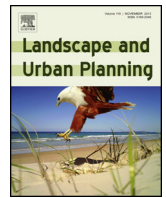


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Landscape and Urban Planning

journal homepage: www.elsevier.com/locate/landurbplan

Editorial

Doing real and permanent good in landscape and urban planning: Ecological wisdom for urban sustainability

If *Landscape and Urban Planning* (LAND) offered an award recognizing individuals throughout human history whose practice in ecological research, planning, design, and management achieved a paramount level of “do[ing] real and permanent good in this world”, to borrow a phrase from the American industrialist and philanthropist Andrew Carnegie (Carnegie, 1889), who would be its recipients? A long list of viable candidates would include – among many others – Ernst Haeckel, Aldo Leopold, Shijun Ma (Jiang, Li, & Polunin, 1991), Arthur George Tansley, Eugene Pleasants Odum, and Frederick Law Olmsted, Sr., but two individuals stand out in particular for their celebrated work in ecologically inspired planning and design: the Chinese planner and engineer Li Bing (李冰) and the Scottish American landscape architect Ian Lennox McHarg.

Li Bing lived in China during the Warring States period (480 BC–221 BC). As the general manager of Shu county (蜀郡, in modern-day Midwest Sichuan Province) in the Qin Kingdom (秦国), he masterminded the construction of one of the world’s oldest large scale ecological projects that has provided real and permanent good (Cao, Liu, & Er, 2010, p. 5; Peng, 2008, pp. 539–542, p. 544; Zhang, Yi, Liu, & Wang, 2013, p. 539). The Dujiangyan (都江堰) irrigation system, first built in 256 BC under Li’s leadership and further developed and expanded over the past 2269 years, lays out an ecological infrastructure on the Chengdu Plain that grants the 6687 km² region (roughly the size of the state of Delaware in the United States) a permanent immunity against natural liabilities of deluge and drought, and offers tens of millions of people across generations the benefits of agricultural irrigation, municipal water supply, navigation, aquatic production, ecological conservation, and tourism (Cao et al., 2010, p. 5; Peng, 2008, p. 542; Li & Xu, 2006, p. 291). With these blessings the Chengdu Plain has been and remains one of China’s fertile bread baskets, earning itself the fame of “*Tian-fuzhiguo*” (“天府之国”, “the land of abundance”) (Cao et al., 2010, p. 3; Peng, 2008, p. 540; Zhang et al., 2013, p. 539).

The sustained real and permanent good provided by the irrigation system is well documented throughout history, and is widely recognized both domestically and internationally. In the classic Chinese history book *Shiji* (《史记》, *Records of the Historian*), historian Sima Qian (司马迁, ca. 145 BC–86 BC) [Sima, 1959] documents the successful operation of the Dujiangyan irrigation system a century after its construction, and praises the many benefits delivered to people in the region (Peng, 2008, pp. 540–541). British historian and sinologist Joseph Needham writes, upon visiting the Dujiangyan irrigation system in 1943 (Cao et al., 2010, p. 5), that “. . . [The Dujiangyan irrigation system is] one of the greatest of Chinese engineering operations which, now 2200 years old, is still in

use and makes the deepest impression on all who visit it today” (Needham, Wang, & Lu, 1971, p. 288). In January 2000, the United Nation Educational, Scientific and Cultural Organization (UNESCO) designated the Dujiangyan irrigation system and nearby Mount Qingcheng (青城山) as a World Cultural Heritage Site (UNESCO, 2000).

The longevity of the Dujiangyan irrigation system in providing real and permanent good has been attributed largely to the holistic principles Li established at the onset (Peng, 2008, p. 540) which guided every step of the project lifecycle, from planning, design, and construction of the system, to its operation, maintenance, and management (Cao et al., 2010, p. 5; Peng, 2008, pp. 539–542, p. 544; Zhang et al., 2013, p. 539). Integral to these guiding principles is the idea of *daofaziran* (道法自然, following nature’s lead) in Daoism (道家理论, Taoism) [Peng, 2008, p. 538, p. 540, p. 546], as elaborated in the classic work *Daodejing* (《道德经》, *Tao-te ching*) by Chinese philosopher Laozi (老子, 571 BC–471 BC) of the late Spring and Autumn period (Chan, 2013). In fact, the development of the Dujiangyan irrigation system and its lasting ecological services have been widely and highly regarded as a classic application of Daoist philosophy to ecologically inspired planning and design by people across generations as well as among Chinese scholars (Peng, 2008, p. 538, p. 540, p. 546). Take as an example the headwork of the Dujiangyan irrigation system, shown in the cover photo of this volume of LAND. It is a one of a kind self-regulating hydraulic system comprising three uniquely designed components – a fish mouth shaped water diversion embankment (鱼嘴, *yuzui*), a sediment and overflow spillway (飞沙堰, *feishayan*), and a bottleneck shaped irrigation gateway (宝瓶口, *baopingkou*). Two of them, *yuzui* and *feishayan*, were initially constructed, and had been subsequently maintained, with natural building materials from the surrounding areas – wooden tripods (杓桩, *macha*) and bamboo cages of cobblestones (竹笼, *zhulong*) (Cao et al., 2010, p. 8). Unlike its counterparts in most contemporary irrigation systems that block, reserve, and discharge upstream water with humanly built and controlled dams, this hydraulic compound automatically diverges upstream water in a seasonally alternated four-to-six ratio, and naturally discharges 90% of the sediments before channelizing the water into distribution systems (Zhang et al., 2013, p. 540, p. 542). This ingenious ecologically inspired design is considered instrumental to the irrigation system’s longevity of providing real and permanent good at a minimal ecological cost, serving as a live testimony and permanent reference of the *daofaziran* idea.

The philosophical bond between the practice of ecologically inspired design/construction and Daoism is powerfully reinforced by a prominent geographic association. The headwork of the

Dujiangyan irrigation system lies in close proximity to Mount Qingcheng, a mountainous Daoist sanctuary where the first organized Daoist establishment *Tianshidao* (天師道, Way of the Celestial Master) was founded about 400 years after the headwork was built (Chan, 2013). This union of philosophical and geographical significance is widely appreciated by all who visited the area, including myself, and rightly recognized by the UNESCO's designation in 2000 (Peng, 2008, p. 534).

Ian Lennox McHarg (1920–2001), author of the ground breaking book *Design with Nature*, was a landscape architect, planner and educator whose ecological worldview and lifetime commitment to doing real and permanent good in this world have had a profound influence in the United States and around the world, on both the practice of landscape and urban planning and the education of landscape architects, planners, and geographers. As articulated by American landscape historian Herbert Gottfried (1999), just as Central Park in New York City is a “universal reference” of real and permanent good for American landscape architect Frederick Law Olmsted, Sr. (1822–1903), McHarg's 1969 seminal book *Design with Nature* is a hallmark of his effectiveness in communicating his ideas about landscape and urban planning to a wide variety of audiences (Gottfried, 1999, p. 289). The book is considered by many, especially those in the practice of landscape and urban planning, to be as profoundly influential as the environmental clarion calls of American naturalist and philosopher Henry David Thoreau (author of *Walden; or, Life in the Woods*, 1854) and environmental writer Rachel Carson (author of *Silent Spring*, 1962) [Revkin, 2001].

In this landmark book, McHarg devotes the chapter “Processes as Values” to the elaboration of “intrinsic [land] suitability”, which he succinctly describes, using a case study on Staten Island in New York City, as, “Once it has been accepted that the place is a sum of natural processes and that these processes constitute social values, inferences can be drawn regarding utilization to ensure optimum use and enhancement of social values” (McHarg, 1969, p. 104). Among the 39 maps included in the chapter is one titled, “unsuitability for urbanization” (McHarg, 1969, p. 113), which delineates areas on Staten Island where severe restricting factors, such as flooding, poor surface and soil drainage, and proximity to the Atlantic Ocean, are identified as being so predominant that urban development – the sort which has already occurred – should be discouraged or even prohibited. In particular, he brings readers' attention to the foreseeable impacts of hurricanes and associated deluges – “Hurricanes [could] sweep up over the oceans and bring tidal inundation [to the island]” (McHarg, 1969, p. 104).

Unfortunately, but “luckily” from a pure scientific research perspective, it turns out that “McHarg had it [all] right”, wrote landscape planner Frederick Steiner of the University of Texas at Austin, USA (Steiner, 2012). McHarg's work on Staten Island was devastatingly vindicated almost half a century later. On October 29th, 2012, superstorm Sandy hit the New York City area, including Staten Island. It dealt a punishing blow to the Atlantic side of the island, causing severe damages and at least 19 deaths (City of New York, 2012). An aftermath assessment by landscape architecture professor Neil Korostoff of Pennsylvania State University, USA, reveals a remarkably high degree of overlap between the areas on the island that were evacuated as a result of Hurricane Sandy and the areas McHarg designated as unsuitable for urban development (Steiner, 2012). Tragically, almost all of the 19 deaths were found in or near the “unsuitable for urbanization” areas on the Atlantic side of the island (City of New York, 2012). In retrospect, the damage and casualties could have been reduced had urbanization on the island followed McHarg's advice.

Why should we turn to Li and McHarg for inspiration?

The first thirteen years of the new millennium witnessed a worldwide surge in what Lebanese American author Nassim Nicholas Taleb calls *black swans* – rare and unpredictable events

of extreme impact and profound repercussions (Taleb, 2010). The Great Smog of 2013 in Beijing, Hurricane Sandy (2012), the great eastern Japan disaster (2011), the 2008 Sichuan earthquake, Hurricane Katrina (2005), and the 2004 Indian Ocean earthquake and tsunami, are but a few of the recent black swans. Equally evident is the surge of black swan events whose impacts are primarily national and/or regional. In the United States, for example, over 100 federal disaster declarations, which designate disastrous situations well beyond the response capabilities of state and local governments, were issued each year since 1998, a significant and persistent increase over the past six decades (The United States Federal Emergency Management Agency, 2013). As the world becomes more urbanized and complexly connected, the increasingly frequent appearance of black swans exacerbates the already tangled social and ecological conditions in urban areas, constituting a major threat to the survival, safety, health, and well-being of human beings.

In the face of these and other steep challenges toward urban sustainability, the world is looking for, and eager to act upon, solutions with fresh ideas, new principles, novel strategies, and innovative approaches that promise, or ideally, are proven, to be efficacious – capable of inducing the desired results and effects. Recently suggested theoretical and practical frameworks that demonstrate great potential include sustainability science (Kates et al., 2001), resilience science (Vogel, Moser, Kaspersen, & Dabelko, 2007), planetary boundaries (Rockstrom et al., 2009), ecological urbanism (Mostafavi & Doherty, 2010), an open cycle of ecological design (Pickett & Cadenasso, 2008), a national foothill strategy for urbanization in China (Yu, 2012), and reorientation of the National Flood Insurance Program in the United States (Burby, 2006). At the regional or municipal level, various urban sustainability initiatives, strategies, and projects have also been proposed and debated, and some of these have been implemented. In the aftermath of Hurricane Sandy, the city of New York witnessed a heated debate on whether or not the city should build a multibillion dollar storm surge barrier to shield itself against future superstorms (Garrison, 2013; Saini, 2013). In China, more than 100 cities have officially adopted the ideal of “eco-city” or “low-carbon city” into their development and land use plans to attenuate or avoid some of the undesirable ecological impacts of urbanization (Wu, 2012, p. 169).

But urban sustainability problems are by nature *wicked* (Rittel & Webber, 1973; Xiang, 2013). Not only are their formulations indeterminate and their solutions non-definitive and consequential (Xiang, 2013, p. 1), but worst of all, there is no opportunity for people to learn by trial-and-error about whether or not, and how well, a proposed solution would work, however novel, innovative, and promising it may seem. This is because once implemented, every suggested solution “leaves [permanent] ‘traces’ that cannot be undone” (Rittel & Webber, 1973, p. 163), and often trigger ripple effects – political, economic, social, ecological, and cultural – throughout the entire socio-ecological system that are neither reversible nor stoppable (Xiang, 2013, p. 1). Take for instance the debate in New York City on the proposal to build a storm surge barrier. As people do not and cannot agree ahead of time upon the assessment of the full range of repercussions of such a major undertaking (Garrison, 2013; Saini, 2013), and given that the last hurricane whose local impacts on the region were reportedly similar to that of Sandy occurred in 1821 (Saini, 2013), can the city of New York spend billions of dollars on building a *real* storm surge barrier just to see how well (if at all) it works if and when the next Sandy-like hurricane hits, and then readily make necessary adjustments or due corrections after an assessment of unsatisfactory performance is corroborated? Of course, the city cannot and will not, simply because “every attempt [it makes at this capacity] counts significantly”. (Rittel & Webber, 1973, p. 163)

One alternative and potentially complementary strategy then is to look out further, temporally, geographically, and philosophically (East, West, ancient, contemporary...) for *ecological wisdom* – evidence-based ideas, principles, strategies, and even approaches that have led to the creation and sustained longevity of such ecological projects as the Dujiangyan irrigation system, the Staten Island study, and Central Park; and to use it selectively and mindfully, in conjunction with principles and strategies of economic, political, social, and cultural relevance, to inform the practice of urban sustainability research, planning, design, and management.

Here ecological wisdom pertains to a peculiar form of ecological domain knowledge that comprises specialized instances of one individual's or a group of individuals' prior and time-honored knowledge in the realm of ecological research, planning, design, and management. Unlike *ecosophy* which Norwegian philosopher Arne Naess coined in 1973, by combining the ancient Greek words *ecos* (household place) and *sophia* (theoretical wisdom), as a synonym for ecological wisdom or wisdom of place (Drengson & Devall, 2010, p. 55) to represent an individual's personal "philosophy of ecological harmony or equilibrium" (Naess, 1973, quoted by Drengson & Devall, 2010, p. 55), the concept of ecological wisdom in the context of ecological research, planning, design, and management (hereafter, ecological wisdom) connotes both *sophia* and the Aristotelian concept of *phronesis* (practical wisdom) [Flyvbjerg, 2001, p. 2; Schwartz & Sharpe, 2010, p. 5], and embraces both individual and collective knowledge. As such, ecological wisdom is by nature ethical, inspirational, and yet still practical. Not only is it about the virtue of doing real and permanent good in this world through the socio-ecological practice of landscape and urban planning, ecological design and engineering, but it is also capable of inspiring and empowering people to figure out "the right way to do the right thing in a particular circumstance" (Schwartz & Sharpe, 2010, p. 5). The acquisition and application of ecological wisdom require a similar social learning lifecycle to the one American scholars Barry Schwartz and Kenneth Sharpe advocate for practical wisdom (Schwartz & Sharpe, 2010, p. 45). In this process, people are on the lookout for, and learn from, those who are *ecologically and practically wise* – individuals as exemplified by Li Bing and Ian McHarg who achieved a paramount level of doing real and permanent good in the field of ecological research, planning, design, and management by putting ideas, principles, and strategies of ecological wisdom into practice through their passion, dedication, and time-honored work. The process is therefore a journey of enlightenment on which people look backward for ecological wisdom while, and in order to be, moving forward for urban sustainability.

What inquiries should we make in this social learning process that will inspire both the discovery and building of new insights of ecological wisdom? As an attempt to ignite in-depth discussions, here I propose some initial questions germane to the acquisition and application of ecological wisdom in the practice of landscape and urban planning. The explorations, however, should include necessarily a careful yet critical examination of the parallel and, in some cases, competing literature on ecological thinking/thought, deep ecology, environmental/ecological ethics, and more recently, ecological civilization, among others.

1. Ecological wisdom as domain knowledge

Of the time-honored and instantiated ideas, principles, strategies, and approaches underlying real and permanently good ecological operations and projects around the world, which should be included in the knowledge realm of ecological wisdom? What

are the relevance and significance of ecological wisdom to contemporary practitioners of landscape and urban planning who face steep challenges regarding urban sustainability? As ecological wisdom consists of evidence-based knowledge, tacit and/or explicit, that originates and evolves from diverse philosophical, cultural, and disciplinary backgrounds and across generations, ideally both the process of, and approach to, its acquisition and application should be designed and implemented in a way that is transgenerational, transcultural, transphilosophical, and transdisciplinary. But under what overarching framework, through what mechanism, and exactly how can such a theoretical ideal be materialized so that scholars and practitioners from the international community of landscape and urban planning are able to come out of their disciplinary, cultural, and philosophical silos to actively engage in the enterprise of ecological wisdom acquisition and application at a delicate level of synthesis and integration?

2. Ecological wisdom as actionable and practical knowledge

How can the ideas, principles, strategies, and approaches of ecological wisdom become (more) actionable and practical – efficacious, effective, and efficient – in informing the contemporary practice of landscape and urban planning in the presence of deep urban sustainability challenges? One obstacle that could hinder this endeavor lies in a clash between the context dependency of ecological wisdom and the individual uniqueness of urban sustainability problems. On the one hand, as a specific form of domain knowledge, ecological wisdom encompasses declarative (knowing that) and procedural (knowing how) knowledge of an individual or a group of individuals that can be, and often are, context dependent with respect to who(m), when, and where (Alexander, 1992, p. 34); on the other hand, despite likely similarities among urban sustainability problems, there always are one or more distinguishing properties of overriding importance that make an individual problem and its solution(s) essentially one of a kind (Xiang, 2013, p. 1). Then the questions are whether there would be ways – theoretical frameworks and practical approaches – that can help guide the exercise of making ecological wisdom actionable and practical under any given circumstance; and if there are instances of practical ecological wisdom in action in cities and regions around the world that shed lights on the development and application of such frameworks and approaches.

3. Ecological wisdom as benchmark

How well would some of the contemporary or emerging theoretical and practical frameworks – sustainability science, resilience science, planetary boundaries, ecological urbanism, and eco-cities – fare with respect to the ideas, principles, strategies, and approaches of ecological wisdom? How would Li Bing and Ian McHarg react to these suggested and, in some cases, adopted frameworks? What would they have said about proposed or implemented urban sustainability initiatives and projects, such as the proposal to build a storm surge barrier in New York City, the building of the Three Gorges dam on the Yangtze River in China, and the development of eco-cities in China and around the world? Obviously, both of them, and Li Bing in particular, would have had a hard time imagining the magnitude of the challenges to urban sustainability the world faces today and the ubiquity of wickedness associated with urban sustainability problems, but the ecological wisdom in their thinking would have enabled them to understand the central problems, perceive the situations, and come up with wise recommendations in line with their commitment to doing real and permanent good in practice.

4. Ecological wisdom as secret of sustained achievement

From the perspectives of epistemology and methodology, how did those individuals, like Li Bing and Ian McHarg, become ecologically and practically wise? How did they come up with ingenious ideas, innovative yet practical principles, strategies, and approaches that led to the creation and sustained longevity of real and permanently good ecological operations and projects? How exactly did Li Bing figure out so elegantly “the right way to do the right thing” in Dujiangyan over 2000 years ago when there were no modern sciences, no high technology, no high building materials (for example, cement, gun powder, steel), and yes, no computers or Internet? What does it take for an individual, an organization, a city, a region, and the world, to become ecologically and practically wise (or wiser) and thus competent to do real and permanent good in the practice of landscape and urban planning in the face of vital challenges to urban sustainability, or at least capable of minimizing or avoiding doing real and permanent bad?

The social learning lifecycle of ecological wisdom acquisition and application, in which people look backward for enlightenment while, and in order to be, moving forward for urban sustainability, is necessarily a process of community building. This is because only through a community of dedicated scholars and practitioners from around the world who, coming out of their disciplinary, cultural, and philosophical silos, actively and substantively engage in the collective learning exercise, can a shared and deeper understanding of ecological wisdom be achieved at a delicate level of synthesis and integration. In the building of this international and transdisciplinary community, the journal *Landscape and Urban Planning* (LAND) is fully committed to being an active participant and resourceful facilitator. As one step forward, LAND, in collaboration with several institutions, will host an international symposium entitled *Doing real and permanent good in landscape and urban planning: Ecological wisdom for urban sustainability* in October 2014 at the city of Dujiangyan, Sichuan, China. The goals for the symposium are twofold: (1) to foster scholarship on the acquisition of ecological wisdom and its applications to the contemporary practice of landscape and urban planning; and (2) to facilitate international collaborations on ecological wisdom research. The symposium will center on inquiries proposed in this editorial, and feature paper presentations which will later be considered for inclusion in a special LAND issue under the same theme. A call for abstracts can be found in the announcement section of this volume, and is available online: www.ees.elsevier.com/land.

For all of us who are in the practice of landscape and urban planning, the social learning process of ecological wisdom acquisition and application will be both enlightening and inspiring. Li Bing, Ian McHarg and many others in the field of ecological research, planning, design, and management have done real and permanent good by putting ideas, principles, and strategies of ecological wisdom into practice through their passion, resolve, and time-honored work, making the world we live in a better place. They have also, intentionally or otherwise, set the ultimate standards, both ethical and professional, for us to pursue the same level of achievements. Our immediate, yet mindful and persistent, response is requested.

Dedication

I dedicate this editorial to the fine memories of Ian L. McHarg (1920–2001) who chaired my qualifying exam committee on *human ecology* in 1987 when I was a doctoral student at the University of California at Berkeley, USA. On a sabbatical leave from the University of Pennsylvania, USA, during that period, Ian taught two classes at Berkeley, *Landscape Planning* and *Man and the Environment*, both of which attracted a wide range of students and faculty

members on and off campus. His love for Mother Nature and resolve to do real and permanent good in this world profoundly motivated and inspired all of us who were privileged to know and interact with him.

Acknowledgements

I am indebted to Xingzhong Yuan of the Chongqing University, Chongqing, China, for contributing to the engaged discussions on Dujiangyan irrigation system, and for providing a photograph of the system's headwork which was taken during our visit in June 2013 and now appears as the cover photo of this volume.

I am grateful to the following individuals for informative discussions, comments, and suggestions before and/or during the preparation of this editorial: Jiquan Chen (University of Toledo, Toledo, USA), Paul Gobster (US Forest Service, Chicago, USA), Wei Ji (University of Missouri, Kansas City, USA), Mark McDonnell (University of Melbourne, Melbourne, Australia), Joan Nassauer (University of Michigan, Ann Arbor, USA), Jari Niemela (University of Helsinki, Helsinki, Finland), Bryan Norton (Georgia Institute of Technology, Atlanta, USA), Steward Pickett (The Cary Institute of Ecosystem Studies, Millbrook, New York, USA), Ye Qi (Qinghua University, Beijing, China), Karen Seto (Yale University, New Haven, USA), Peijun Shi (Beijing Normal University, Beijing, China), Fritz Steiner (University of Texas at Austin, USA), Sander van der Leeuw (Arizona State University, Tempe, USA), Jianguo Wu (Arizona State University, Tempe, USA), Wentao Yan (Chongqing University, Chongqing, China), Bo-Shan Xiang (Yale University, New Haven, USA), and Tong Xiang (Duke University, Durham, USA).

My appreciation also goes to Randi Chen, Liang Chen, Cindy Meng, and Bailu Yi of the Global Institute for Urban and Regional Sustainability (GIURS) at the East China Normal University, Shanghai, China for their assistance in literature search.

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Wei-Ning Xiang^{a,b,*}

^a The Global Institute for Urban and Regional Sustainability (GIURS), The Shanghai Key Laboratory for Urban Ecological Processes and Eco-Restoration (SHUES), The East China Normal University, Shanghai 200241, China

^b Department of Geography and Earth Sciences University of North Carolina at Charlotte, Charlotte, NC 28223, USA

* Correspondence to: The Global Institute for Urban and Regional Sustainability (GIURS), The Shanghai Key Laboratory for Urban Ecological Processes and Eco-Restoration (SHUES), The East China Normal University, Shanghai 200241, China.
E-mail addresses: wxiang@mail.ecnu.edu.cn,
wxiang@unccl.edu