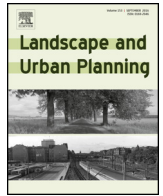




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Ecological wisdom as an emerging field of scholarly inquiry in urban planning and design

Xinhao Wang, Danilo Palazzo*, Mark Carper

University of Cincinnati, School of Planning, United States

HIGHLIGHTS

- Ecological planning and design applies ecological principles to guide development.
- Ecological wisdom calls for knowing, understanding, and applying ecological information to enhance the quality of life.
- Ecological wisdom empowers people to support ecological planning and design.

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ABSTRACT

In an increasingly urbanizing world, mitigating the consequences of a concentrated humanity becomes all the more urgent. Urban planners and designers have developed criteria for site selection, have tempered the pace and moderated the type of development, and have guided the arrangement of human activities in order to improve the quality of human settlement. However, these efforts have not always proved adequate, and many similar urbanization problems have been persistently reoccurring. Why do the short term needs or desires of humans often trump the need for minimal ecological damage? We argue that a prevailing dualistic perspective of humans and environment as separate from each other leads to a lack of appreciation for environmental integrity. To address this problem, we turn to ecological wisdom, which calls for recognition of and respect for the complexity of the environment, for actionable solutions. In this paper, we define ecological wisdom as a means of knowing, understanding, and applying ecological information in order to guide urban planning and design professionals. Based on ecological wisdom, urban planners and designers combine willingness and ability to include knowledge from different fields – such as ecology, sociology, and economics – to engage stakeholders in setting long term, beneficial goals. To better achieve this, more scholarly research on the application of ecological wisdom in defining place appreciation is needed, thus averting urban problems by reminding people that the well-being of a place is reflected in the overall quality of life illuminated as human experience.

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1. Introduction

In response to an editorial by Xiang (2014), the first *International Symposium on Ecological Wisdom for Urban Sustainability: Doing real and permanent good in landscape and urban planning* was held in October 2014 in Chongqing, China. Presented at the symposium, this paper focuses on one of the five topical areas: *A research agenda: Ecological wisdom as an emerging field of scholarly inquiry*. The goal for the symposium was to foster international scholarship on ecological wisdom and its application in the contemporary practice of landscape and urban planning. In response to that goal, this

paper proposes that, in addition to traditional ecological study, ecological wisdom should be promoted in the practice of landscape and urban planning. To support the proposal, this paper analyzes the limitation of the prevailing dualistic paradigm of humans and the environment as separate entities and argues that urban planners and designers can use the power of ecological wisdom to seek out other stakeholders' support for their ecological planning and design. Specifically, the paper starts with a concise summary of the conceptual development of ecology, which is followed by a description of the evolution of ecological planning and design. These two sections present the current status of knowledge inquiry. The next two sections describe wisdom in general and ecological wisdom in particular. Building upon the comparison of knowledge inquiry and wisdom inquiry, strategies to integrate ecological wisdom with urban planning and design are proposed. In conclusion, the dualistic view of human needs and environmental integrity in

* Corresponding author.

E-mail addresses: wangxo@ucmail.uc.edu (X. Wang), palazzo@ucmail.uc.edu (D. Palazzo), carpermk@mail.uc.edu (M. Carper).

ecological planning and design is not sufficiently effective to reach a harmonious human–environmental relationship. By pursuing and applying ecological wisdom, landscape and urban planners may gain support from diverse groups of stakeholders to achieve harmonious and resilient development. This paper will contribute to the body of literature on the paradigmatic shift from knowledge-based inquiry to that of wisdom-based (Maxwell, 2007) in the practice of landscape and urban planning.

2. Ecology

Ecological ideas harken back to the critical thinking of the ancient Greeks. Herodotus (484–425 B.C.E.) offered in great detail the mutualistic relationships among different species in his writings (Egerton, 2001). Aristotle (384–322 B.C.E.), who embraced empiricism as an epistemological means of observation and conceptualization, pressed an advancement of natural philosophy (Anagnostopoulos, 2009), which includes observations and interpretations of ecological relationships. More recently, through the arguments and persuasiveness of such luminaries as Francis Bacon and John Locke, scientific methodology, as a tactic to progress universal understanding, became a widely accepted investigative and epistemological model (Kors, 2003). Carl Linnaeus' (1707–1778) development of a taxonomy, thereby providing a means of classifying and describing family, genus, and species, is regarded as the origin of scientific ecological studies and systematic thinking (Reid, 2009). The Arcadian Ecology of Gilbert White (1720–1793) endorsed a harmonious existence between man and nature (Worster, 1994). In the 19th century, Alexander von Humboldt (1769–1859), a geographer, was one of the first to establish a relationship between environment and plant species (Rupke, 2008), contributing to the evolution of the concept of landscape (Kwa, 2005) and its understanding as a combination of aesthetic appreciation and science (Lubowski-Jahn, 2011). Linnaeus's work provides the foundation for Charles Darwin's (1809–1882) concept of natural selection and evolution (Stauffer, 1957) and Ernst Haeckle's (1834–1919) coining of the word "ecology" (Odum, 1971) derived from the Greek word, *oikos*, for household and, in an economic sense, the management of its resources.

The 20th century saw greater discussion of systems, cycles, overlapping spheres, habitats, biome types, biodiversity, and, ecosystem resilience (Biggs et al., 2015; Levin, 1998; Meerow, Newell, & Stults, 2016). As urbanization and industrialization progressed, their impact on the environment became more noticeable, and human ecology emerged as a line of study into the impact on, as well as an interplay between, social and ecological systems (Marsh, 1864; Gross, 2004). Ecology has been adopted by various academic disciplines, including geography, home economics, anthropology, sociology, and psychology, spawning such sub-disciplines as cultural ecology, political ecology, urban ecology, urban political ecology, behavioral ecology, and anthropological ecology. Architecture, landscape architecture, urban planning and design have also embraced ecology, developing specific academic and professional sub-fields such as ecological planning and design (Lyle, 1985; McHarg, 1969; Ndubisi, 2002, 2014; Palazzo, 1997; Steiner, 2001, 1991, 2016; Thompson & Steiner, 1997; Van der Ryn & Cowan 2007).

In consideration of the tremendous impact of humans on the earth's ecosystems (Zalasiewicz, Williams, Steffen, & Crutzen, 2010), systems thinking advocates more firmly address the need to understand the reciprocal interactions between humans and nature (Sheppard & McMaster, 2004). In an effort to reject a persistent sense of dualism (Bateson, 2002), Morton (2007) presents the concept of "Ecology without Nature". Ecology is not about separating and then balancing care for the environment and care for humans.

We care about the environment because it surrounds and sustains us. As an example of applying ecological knowledge in practice to support humans, ecological planning and design pays special attention to the human–environment relationships in making plans "so that human actions are in tune with natural processes" (Ndubisi, 2002, p. 5).

3. Ecological planning and design

In an increasingly urbanizing world (United Nations, 2014), mitigating the consequences of a concentrated humanity becomes all the more urgent. Urban planners and designers have developed criteria for site selection, have tempered the pace and moderated the type of development, and have guided the arrangement of human activities in order to improve the quality of human settlement. However, these efforts have not always proved adequate, a recent example being the damage that Hurricane Sandy inflicted on Staten Island, New York, USA. Much of the heavily impacted areas on the island were those that landscape architect Ian McHarg had lucidly stated in 1969 as not suitable for development (McHarg, 1969; Steiner, Simmons, Gallagher, Ranganathan, & Robertson, 2013), begging the question as to why tragedies such as this continue to happen after professionals have clearly recommended strategies to prevent them. Why, among all factors considered in planning and design, is the ecological component the most difficult to be assessed as relevant? Why do the short-term needs or desires of humans so often trump the need for the ecological integrity upon which we are so dependent?

Urban planning and urban design are goal-oriented decision making processes, which consider interactions among many factors, such as economics, social and cultural context, physical environment, and ecology. An ecological plan coordinates public measures with full consideration of their implications for a common purpose (Faludi, 1985). Zube, 1986 summarizes elements of ecological planning activities as: "(1) Inventory the quality, quantity and geographic distribution of natural and cultural resources; (2) Understand resources processes; (3) Assess the efficacy of accommodating different activities on the land with minimal disruption of natural processes or reduction of resource values; and (4) Propose solutions that are ecologically sound, culturally appropriate, and aesthetically satisfying".

The integration of planning and ecology timidly matured in the two decades after the Second World War. The faith (and the parallel fear) in the atomic technology and in the gospel of economic efficiency (Hays, 1959) – rooted in the early decades of the conservation movement – created enormous difficulties to the few antagonistic voices. At least two individuals provided early contributions during those two decades. One was Garret Eckbo, 1950, tried to understand the potential applications of landscape architecture to promote a better harmony between human beings and nature. The second was Hideo Sasaki who, as director of the Landscape Architecture Department at the Harvard Graduate School of Design from 1958 to 1968, reformed, in a multidisciplinary way, the teaching of landscape architecture by bringing into courses experts of many disciplines (Walker & Simo, 1994).

The 1960s and 1970s brought greater recognition to ecological planning. Planners and designers had new goals and purposes to reduce human intrusion into the environment as they were encumbered by new or renewed responsibilities toward ecology (Odum & Davis, 1969), profession (Gunn, 1966), society (Grunwald, 1966), history (Brooks, 1966), and aesthetics (Marx, 1964). The Green Revolution, which was an acknowledged social process (Sale, 1993) has, in parallel, changed the approach to environmental resources through planning tools. Ian McHarg's book *Design with Nature* (1969) was compared, because of the importance in the

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