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### Title

Ian McHarg, *Overlay Maps and the Evaluation of Social and Environmental Costs of Land Use Change*. *CSISS Classics*

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### Author

Corbett, John

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**Ian McHarg: Overlay Maps and the Evaluation of Social and Environmental  
Costs of Land Use Change  
By John Corbett**

*Background*

Ian McHarg (1920–2001) was one of the true pioneers of the environmental movement. Born near the gritty, industrial Scottish city of Glasgow, he gained an early appreciation of the need for cities to better accommodate the qualities of the natural environment that until then had largely been shunned. After serving in World War II, McHarg went to the United States to attend Harvard University, where he picked up degrees in landscape architecture and city planning. He was responsible for the creation of the Department of Landscape Architecture at the University of Pennsylvania. McHarg, however, would not be confined to the halls of academia. In 1960, McHarg hosted his own show, "The House We Live In," on the CBS television network, an early effort to publicize discussion about humans and their environment. The show, along with a later PBS documentary, helped make McHarg a household name when he published his landmark book, *Design With Nature*, in 1969. In it, McHarg spelled out the need for urban planners to consider an environmentally conscious approach to land use, and provided a new method for evaluating and implementing it. Today *Design With Nature* is considered one of the landmark publications in the environmental movement, helping make McHarg arguably the most important landscape architect since Frederick Law Olmsted.



*Innovation* During the 1950s and 1960s, the nascent American Interstate Highway System began to spread its tentacles around ever-increasing swaths of land. In its wake, suburban sprawl increased in scope and intensity. Highway planners and subdividers focused almost exclusively on narrow cost-benefit and efficiency considerations in choosing how to implement their ideas. According to Ian

McHarg, "the task [of design] was given to those who, by instinct and training, were especially suited to gouge and scar landscape and city without remorse—the engineers."

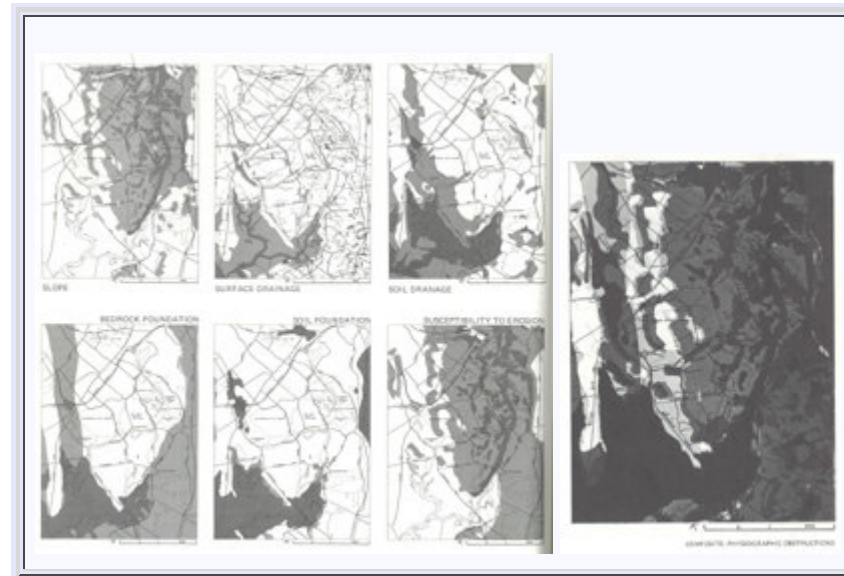
McHarg's quote came from *Design With Nature*, in which he laid forth the argument that form must follow more than just function; it must also respect the natural environment in which it is placed. "[The engineer's] competence is not the design of highways," McHarg explained, "merely of the structures that compose them—but only after they have been designed by persons more knowing of man and the land." While this might seem a fairly obvious concept in the twenty-first century, in the late 1960s this was cutting-edge thought.

An important reason why the environment played such a small role in planning and design stemmed from the lack of a method to quantify and display information about the natural environment in any meaningful way. In the days before advanced computer technology, there was no way to store, process, or present large amounts of spatial data.

McHarg's way around this limitation was through the use of map overlays. As the adage goes, a picture is worth a thousand words, and McHarg felt that visually displaying spatial data could convey large amounts of information in a concise manner. McHarg demonstrated his approach with the example of a highly controversial road construction project in Staten Island, New York, known as the Richmond Parkway. Engineers had proposed that the most cost-efficient route for the parkway lay along a five-mile stretch of scenic Greenbelt parkland, which would connect the two ends of the island along the straightest path. Local protests arose by 1968, and McHarg's firm was asked to review the various proposed routes.

McHarg analyzed the situation with respect to "social values," or benefits and costs to society caused by the construction of a multipurpose facility such as a major traffic artery. There were many factors that went into the broad field of social values, including historic, water, forest, wildlife, scenic, recreation, residential, institutional, and land values. A map transparency was created for each factor, with the darkest gradations of tones representing areas with the greatest value, and the lightest tones associated with the least significant value. All of the transparencies were then superimposed upon one another over the original map. The darkest areas showed the areas with the greatest overall social values, and the lightest with the least, following the format of each individual layer. The social value composite map was then compared with similar maps constructed for geologic and hazard considerations, and the result was a clear picture of where to situate the controversial stretch of road. The road, McHarg concluded, should be built in an area west of the Greenbelt, thus saving the socially valuable forest and parks from the bulldozer.

In the end, neither his nor any other proposal was ever acted upon, and the Richmond Parkway, later renamed the Korean War Veterans Parkway, remains unfinished. McHarg's use of the overlay method, while not resolving this thorny issue, was a forerunner to later forms of complex analysis in multi-criteria route evaluation and decision making.



### *Publications*

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*Related Works*

Klopatek, J. M. and Gardner, R. H., editors *Landscape ecological analysis: Issues and applications*. New York, NY: Springer, 1999.

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*Links*

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