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Reviews

JANE JACOBS (2000) *The Nature of Economies*. New York: The Modern Library (Random House), 190 pp., ISBN 0-679-60340-9

Economists belonging to virtually every school of thought falling outside the current mainstream have discussed similarities between biological evolution and economic development for more than a century (Hodgson 1998). That evolutionary biology should prove a more fruitful source of inspiration than classical Newtonian mechanics has long been understood by individuals who observed that in the "natural" and "man-made" realms, the most significant processes characteristically exhibit increasing complexity, acceleration through time, and irreversibility. Two serious drawbacks, however, have always constrained the rigid application of biological metaphors to the study of economic development. The first is that evolution involves no intentionality toward a specific goal, whereas economic development is driven by the satisfaction of human wants. The second is that, with the exception of the smallest levels of complexity (such as genes and microbes), different biological species do not interbreed, while human beings produce new things by relentlessly combining artifacts, skills and ideas—including the genes of two different animal species (Basalla 1988, DeGregori 1985, Mokyr 1990). These major flaws aside, ideas and theories about natural evolution have in the past provided useful analogies to further our understanding of economic systems. Closer to us, some economic implications of recent advances in evolutionary biology and ecosystem analysis are regularly discussed in academic outlets such as *The Journal of Evolutionary Economics*, *The Journal of Bioeconomics*, *The Journal of Industrial Ecology*, *The Journal of Social and Biological Systems* and *Ecological Economics*, among others.

One of the latest authors to pursue this line of inquiry is social theorist Jane Jacobs. Best known for her devastating critique of urban planning (Jacobs 1961), Jacobs has long analyzed cities as "problems in organized complexity" and drawn on biological metaphors to explain, among other things, the role of money as a feedback-carrying mechanism (Jacobs 1984) and the rationale for political secession (Jacobs 1980). Her latest offering, however, goes beyond the use of metaphors as heuristic devices and is better understood as a search for universal principles that characterize complex systems, both "natural" and "human made."

The premise of *The Nature of Economies* is that human beings exist wholly within nature as part of the natural order in every respect—a statement that I suspect will not shock most readers of this journal, but that is likely to generate much controversy in other circles. In taking that stance, she tries to distance herself from both "misanthropic ecologists" and economists, industrialists, politicians, and others who believe that it is possible for human beings to circumvent and outdo the natural order. Written, like her previous book *Systems of Survival* (Jacobs 1992), in the form of a platonic dialogue between a cast of five New York characters, the main question she tries to answer is: Does economic life obey the same

rules as those governing the systems in nature? The answer given by one of the characters is straightforward: "I'm convinced that economic life is ruled by processes and principles we didn't invent and can't transcend, whether we like that or not, and that the more we learn of these processes and the better we respect them, the better our economies will get along" (p. 11).

Jacobs' characters then discuss in the following chapters such processes as development, expansion, self-refueling, evading collapse, fitness for survival and unpredictability. Development, whether in nature or in economies, is thus best viewed as an open-ended process by which differentiations emerge from generality, which then become other generalities from which further differentiations emerge. Such development depends, however, on numerous, various, and intricate co-development relationships. For example, tool making began with four existing generalities: sticks, stones, bones and fire. Our ancestors then differentiated those found generalities into many things from hammers to scrapers and bags, innovations that required the fusion of other, originally unrelated, innovations.

Expansion, whether natural or economic, then depends on capturing and using transient energy. The more different means a system possesses for recapturing, using, and passing around energy before its discharge from the system, however, the larger are the cumulative consequences of the energy it receives. Thus diverse ensembles expand in a rich environment, which is created by the diverse use and reuse of received energy. For example, a diversified city will generate much more local expansion from a new business venture than a small town, much like a well developed forest's ecosystem will convert more sunlight into biomass than a desert. The refuelment of growing cities, unlike their initial start, depends more on replacing imports than generating new exports. According to Jacobs' characters, growing economies, like complex ecosystems, are "dynamically stable" inasmuch as they can evade collapse by self-correction through the grace of four processes: bifurcations, positive-feedback loops, negative-feedback controls, and emergency adaptations. Another check on the collapse of advanced human economies are human traits such as aesthetic appreciation, fear of retribution, awe expressed as veneration, persuasiveness, and corrective tinkering and contriving. Jacobs concludes her dialogue by noticing that systems that make themselves up as they go along aren't predictable.

Like all of Jacobs' previous books, *The Nature of Economies* is superbly written, idiosyncratic and shows internal evidence of immense research and intellectual tinkering. Ideas and insights are freely borrowed from biology, evolutionary theory, ecology, geology, meteorology, anthropology, history, political science, economics, and other disciplines and carefully woven into a complex, but succinct, intellectual tapestry. Jacobs is once again at her best describing complex dynamic processes in an accessible way and in extolling the virtues of human creativity and adaptation. Her book contains genuine insights that are likely to challenge, and probably in time reverse, some economic dogmas. Her most important insight, in my opinion, is her case for diversified urban economies rather than specialization (pp. 106–108). Yet this insight is not new, for she first developed it in 1969 in *The Economy of Cities* and it has been the subject of a heated debate in the urban economics and economic geography literature in the last decade (Feldman forthcoming). Jacobs recasts it in light of the principle that "diversity of organisms generates biomass expansion owing to multiple reuses of received energy before it leaves the conduit" (p. 106), yet I am not convinced that such an analogy is a major improvement over her earlier work.

The problem here, along with other previous insights that she reformulates along evolutionary lines, is that such analogies cannot avoid the traditional pitfalls of biological perspectives on economic development. Economic development is the result of individuals trying to solve problems affecting them by combining heterogeneous facts, ideas, faculties, and skills on a scale that is unparalleled in the rest of nature. So what about intentionality and combinations for the purpose of creating new artifacts in nature? As one of Jacobs' character points out, one should not infer cooperation (or interdependence as another character suggests) when plants or animals don't know they are cooperating. To this objection, another discussant gives the example of a Botswana honey bird that enrolls skunklike mammals and human beings by guiding them to a hive in the expectation that they will share the fruit of their capture. But can we truly speak of intentionality when species exhibit only one kind of interdependent behavior, as many do? Regarding combinations, another character refers to mitochondria that power our cells by combining sugar and oxygen to illustrate the universality of this principle. But as far we know, this is about all that mitochondria combine. Similarly, beavers mix mud and logs to create dams, but not much else. Both mitochondria and beavers can generate much expansion, but do individual specimens generate much development? I don't think that Jacobs has somehow managed to explain away these pitfalls, for as one of her characters points out after a discussion of these issues: "Of course, development still embodies mystery. Why should there be a force driving the universe toward intricacy and away from simplicity? But if the *why* of development is impenetrable, at least the *how* of development is discernible" (p. 23). I suspect that this answer will not satisfy most readers of this journal who are likely to object that human beings' craving to remove feelings of uneasiness motivates economic development.

There are also other ideas and suggestions that I find misguided in this book, for example, Jacobs' fondness for biomimicry, i.e. the movement for the development of biodegradable products based on imitating the chemistry of nature at life-friendly temperatures. What is objectionable about biomimicry is of course not the basic principle. After all, the Greek philosopher Democritus pointed out long ago that arts such as weaving, building houses, and singing were discovered as humans imitated and became the pupils of animals (Long 1991:850). The problem here is rather the main promoter of this movement, Benyus (1997), and specifically her anti-market ethos and quasi-religious repulsion for innovations that are not directly based on nature's imitations. Perhaps most puzzling, however, is Jacobs' discussion of the benefits of accumulating human capital and its beneficial effect for environmental preservation. She refers, among others, to economists Robert Lucas and Paul Romer, but does not write a single word on behalf of Julian Simon and his collaborators (Simon 1995a, 1995b). Perhaps Jacobs' characters attack on urban sprawl would have been less stringent if they had known that innovations in agricultural technologies have reduced farmland requirements to such an extent that suburban growth has had virtually no impact on the availability of wildlife areas.

To be fair, however, Jacobs' book does contain many valuable analogies and insights, such as her description of the sun as the "only natural monopoly" and her description of subsidies as "political and economic addictions." It also displays, among other things, a much less misanthropic view of human life than ecological economists and a better understanding of market processes than industrial ecologists. It is therefore likely to make people educated in conventional economic and environmental approaches rethink some of their preconceptions.

In the end, however, I am not convinced that Jacobs' persuasively proves her thesis. Be that as it may, *The Nature of Economies* deserves to be read by a large audience, for there will likely be something new in it for all of its readers.

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