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A tale of two classics. By: Wilson, David Sloan. New Scientist. 3/24/2012, Vol. 213 Issue 2857, p30-31. 2p. Abstract: The author compares theories of evolutionary biology to those of neoclassical economics, with particular focus on economist Milton Friedman's essay "The Methodology of Positive Economics" and "The spandrels of San Marcos and the Panglossian paradigm" by evolutionary biologists Stephen Jay Gould and Richard Lewontin. He discusses assumptions in both disciplines regarding the causation of various behaviors, in particular the role of adaptation as a driver of economic and evolutionary changes. DOI: 10.1016/S0262-4079(12)60754-4. Reading Level (Lexile): 1450. (AN: 73908083)

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**A tale of two classics**

## Opinion

What happens when you dissect the work of one of the 20th century's most influential economists using the scalpel of evolutionary theory, asks David Sloan Wilson

Assuming markets are perfect is just one of the wrong assumptions of neoclassical economics

ONE of the most influential works in the field of economics is Milton Friedman's 1953 essay, The Methodology of Positive Economics, in which he argues that

people behave as if the assumptions of neoclassical economic theory are correct, even when they are not. One of the most influential works in the field of evolutionary biology is Stephen Jay Gould and Richard Lewontin's 1979 paper "The spandrels of San Marcos and the Panglossian paradigm", which argues against excessive reliance on the concept of adaptation (Proceedings of the Royal Society B, vol 205, p 581).

Different disciplines, different decades, so no wonder these classics have never been compared. Interestingly, when we do compare them, one turns out to reveal weaknesses in the other that are highly relevant in 2012. The reason they can be related is because Friedman relied on an evolutionary argument for his justification of neoclassical economics. I cannot improve on his own framing:

The abstract methodological issues we have been discussing have a direct bearing on the perennial criticism of "orthodox" economic theory as "unrealistic" as well as on the attempts that have been made to reformulate theory to meet this charge. Economics is a "dismal" science because it assumes man to be selfish and money-grubbing, "a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli that shift him about the area, but leave him intact"; it rests on outmoded psychology and must be reconstructed in line with each new development in psychology; it assumes men, or at least businessmen, to be "in a continuous state of 'alert,' ready to change prices and/or pricing rules whenever their sensitive intuitions detect a change in demand and supply conditions;" it assumes markets to be perfect, competition to be pure, and commodities, labor, and capital to be homogeneous.

Friedman admits that the orthodox theory's assumptions about human preferences and abilities, often labelled Homo economicus as if they are a description of a biological species, are manifestly unrealistic. Yet elsewhere in his work, he claims they are still predictive of human economic behaviour, returning to three analogies to make his case.

The first one is that trees distribute their leaves as if maximising their exposure to sunlight, yet no one pretends they are really performing optimisation equations. Likewise, expert pool players act as if they are performing complex calculations when making shots, when in fact this behaviour has been moulded by countless hours of play. Finally, a company acts as if it is maximising profits, when its continued survival is the result of a selection process in which the non-optimising firms were eliminated.

The first is an example of genetic evolution, the second of individual learning and the third cultural evolution. In all cases, a process of selection results in entities that behave adaptively, "as if" they are solving complex optimisation equations when in reality they are doing nothing of the sort.

Evolutionary biologists will recognise Friedman's examples as distinctions between ultimate and proximate causation. Ultimate causation explains why one particular trait exists, out of the many that could exist, based on the outcome of a selection process. Proximate causation explains how the trait exists in a physical sense.

Sunflowers turn towards the sun because selection has favoured phototropism, or directional growth. This is the ultimate explanation, but within each individual sunflower is a physiological mechanism causing the plant to grow that way. The proximate explanation need bear no resemblance to the ultimate, other than to reliably cause the adaptive behaviour to come into existence.

So far, Friedman is on firm evolutionary ground with his "as if" argument. Evolutionists frequently reason about the properties of species "as if" they are maximising their fitness, without worrying about the proximate mechanisms. As a simple example, we can confidently predict that many desert animals will be sandy coloured to avoid detection by predators and prey. This holds true for many animals, ranging from insects and snails to reptiles, birds and mammals, even though the sandy coloration in each case is caused by a different proximate mechanism. The ability to predict the properties of organisms in functional terms,

without reference to proximate causation, is one of the most powerful features of evolutionary theory.

But reasoning on the basis of adaptation delivers the right answer only if the trait is indeed a product of selection and if we have correctly identified the selection pressures. If the trait isn't adaptive, we'll be wrong. If we assume the trait is a solution to one adaptive problem, such as the need for a foraging animal to maximise energy intake per unit time, when it is actually a solution to another - say, the need for a foraging animal to manage a trade-off between energy gain and predation risk - we'll also be wrong.

That's where the "Spandrels" paper comes in. Gould and Lewontin chastised some of their colleagues for assuming every trait must have an adaptive explanation and for accepting adaptive "just-so" stories without adequate proof. They outlined a more comprehensive approach that requires strong evidence for any adaptationist explanation and reflects the many ways non-adaptive traits can persist.

The "complete" evolutionist might begin with an adaptationist hypothesis to explain a trait, but would then test the hypothesis and modify it as necessary, keeping other adaptation and non-adaptation hypotheses in mind as live options. Such evolutionists also study proximate mechanisms, development and phylogeny alongside natural selection.

Some evolutionists complain that Gould and Lewontin created a straw man, but their portrait of "naive adaptationism" accurately describes Friedman's defence of neoclassical economics. He assumed that, as far as ultimate causation is concerned, one or more selection processes (genetic, learning or cultural) resulted in people who resemble Homo economicus. He did not consider other adaptationist or non-adaptationist hypotheses. He did not show that proximate mechanisms, development and phylogeny needed to be considered along with ultimate causation. In fact, his only evidence was his claim that economic policy based on orthodox theory was successful. His "as if" argument was evolutionary, but not evolutionary enough.

The weakness of Friedman vs Gould and Lewontin reveals a widespread problem in social science. All non-creationist accounts of social behaviour strive for consilience - that is, unity with other branches of knowledge. Economic or social policy that ignores the way we are as a species and how cooperation evolves in all species is no more likely to succeed than an architect who ignores the laws of physics.

For complex reasons, and for some decades, evolutionary theory has been avoided as an explanatory framework for much in social science. The result is that when we scrutinise theories and policies based on social science through the filter of modern evolutionary science, they often fail the consilience test as miserably as Friedman now does.

I believe social scientists and policy-makers need to become complete evolutionists. If they do, the bad news is they must rethink current theories and policies to pass the consilience test. The good news is that when they earn passing grades, our economic and social policies will work better than they do now.

## PROFILE

David Sloan Wilson is SUNY Distinguished Professor at Binghamton University in New York state and president of the Evolution Institute ([evolution-institute.org](http://evolution-institute.org)), which formulates public policy from an evolutionary perspective. His most recent book is *The Neighborhood Project: Using evolution to improve my city, one block at a time* (Little, Brown, 2011)

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