

ate change. There can be no presumption that any particular change of institutions is better or worse. Ultimately, the answer to that question involves a very complex series of historical contingencies.

Fukuyama seems quite correct to grasp for this type of contingent theory, but I think he is wrong to believe that it cannot be formulated much more systematically, even mathemati-

cally. Although human society is immensely complex (as he observes), so are many physical systems. In the natural and social sciences alike, it is all a matter of getting the right abstraction. Incredibly ambitious and fun as *The Origins of Political Order* is, in a sense Fukuyama has not been ambitious enough. He finished too far toward the trees in the forest-trees trade-off. While there is a lot to

enjoy among the trees, I hope for more forest in the next volume—which I eagerly await.

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ECONOMICS

A Darwinian Approach

Daniel J. Rankin

If I find 10,000 ways something won't work, I haven't failed. —Thomas Edison

Economics and evolutionary biology often seem like long-lost brothers, and the two fields share a number of theories. Both economics and evolutionary biology tend to view individuals as agents who maximize utility (welfare in economics and fitness in biology). Despite their similarities and overlap (1), the concept of selection, in itself, has largely remained in the realm of the biological sciences.

In *Adapt: Why Success Always Starts with Failure*, Tim Harford argues that much can be gained from taking an evolutionary view of economics. Drawing on examples ranging from a rebellion of colonels against top-down control in the recent Iraq war to the success of Google at innovation, Harford (a

London-based economics writer) shows why the flexibility to fail should be a key criterion for crafting successful businesses. He argues that allowing for different competing ideas, products, and business strategies

will eventually lead to those that are best able to survive in a complex world. Crucial to this claim are two fundamental requirements of biological evolution: variation and selection on that variation.

In the most general sense, selection does not require replication and inheritance but

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Ford's famous failure. An Edsel from the late 1950s.

simply depends on a trait that affects success (measured as fitness in biology) and exhibits variation. Thus it can apply equally well to ideas, supermarket products, and genes. In fact, George Price—who reduced selection to its basic components in his eponymous equation—sought to create a general theory of selection (2, 3) as Claude Shannon had formulated a general theory of information (4). The claim that selection can act on ideas is not new; Richard Dawkins promoted it in his theory of the meme (5).

Harford draws on selection as a method for tackling complexity. In situations where even experts cannot agree on the best strategy, it is clearly better to try out different ideas and stick to those that do not fail. However, it is essential to be able to survive the failure of the ideas that don't work out. Limited liability corporations exist to allow the individuals who start them to survive their failure. In the recent financial crisis, some stricken firms were rescued by governments concerned about the potential wide-reaching effects of their collapse. Harford argues instead that no matter how large, ailing businesses should be allowed to fail, while governments act to contain the collateral damage to the economy. This, however, was not the approach taken in the recent bailouts. "The ideal candidate to receive government support," Harford remarks, "seems to be a company that is very big and very unsuccessful. This is the perfect formula for sustained failure."

Harford draws on numerous examples in which rigid and hierarchical organizational structures have failed to provide adequate solutions. He favors an approach that admits different ideas, allowing the weak ones to fail and the strong ones to succeed.

The book also contains lessons for scientists and the way that science is run. Harford advocates the use of competitions to drive research, as in the famous quest for a means

to determine longitude. For example, he suggests that the best path to an HIV vaccine lies in offering a large prize (billions of dollars) for its development. Nonetheless, he offers a caveat: because such competitions could not have built the Internet, academics should be given greater freedom to experiment and take risks. Given the current pressure to publish, this can only mean providing longer time frames for returns on research. At present, few funding programs will commit to support beyond a five-year period.

Overall, *Adapt* convincingly argues against central control and for encouraging experimentation with competing ideas and strategies. Amid the complexities of our world, there is often no way forward other than trial and error. Only by keeping an open mind, simultaneously trying different alternatives, and (most important) being prepared to fail can we hope to solve many of the pressing problems we face. Bertrand Russell once remarked that he "would never die for [his] beliefs because [he] might be wrong." In a similar way, we must make sure all experiments are survivable in a Darwinian economy.

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