

# 4

## “Networked Minds” Require a Fundamentally New Kind of Economics

*This chapter was first published on March 20, 2013, at <http://www.alphagalileo.org/ViewItem.aspx?ItemId=129550&CultureCode=en> and is reproduced here with minor stylistic improvements. It refers to the paper by T. Grund, C. Waloszek, and D. Helbing (2013) *How natural selection can create both self- and other-regarding preferences, and networked minds*. *Sci. Rep.* 3:1480, see <http://www.nature.com/srep/2013/130319/srep01480/full/srep01480.html>.*

*In their computer simulations of human evolution, scientists at ETH Zurich find the emergence of the “homo socialis” with “other-regarding” preferences. The results explain some intriguing findings in experimental economics and call for a new economic theory of “networked minds”.*

Economics has a beautiful body of theory. But does it describe real markets? Doubts have emerged not only in the wake of the financial crisis, since financial crashes should not occur according to the then established theories. For ages, economic theory has been based on concepts such as efficient markets and the “homo economicus”, i.e. the assumption of competitively optimizing individuals and firms. It was believed that any behavior deviating from this would create disadvantages and, hence, be eliminated by natural selection. But experimental evidence from behavioral

economics show that, on average, people behave more fairness-oriented and other-regarding than expected. A new theory by scientists from ETH Zurich now explains why.

“We have simulated interactions of individuals facing social dilemma situations, where it would be favorable for everyone to cooperate, but non-cooperative behavior is tempting,” explains Thomas Grund, one of the authors of the study. “Hence, cooperation tends to erode, which is bad for everyone.” This may create tragedies of the commons such as over-fishing, environmental pollution, or tax evasion.

## 4.1 Evolution of “Friendliness”

Dirk Helbing of ETH Zurich, who coordinated the study, adds: “Compared to conventional models for the evolution of social cooperation, we have distinguished between the actual behavior—cooperation or not—and an inherited character trait, describing the degree of other-regarding preferences, which we call the friendliness.” The actual behavior considers not only the own advantage (“payoff”), but also gives a weight to the payoff of the interaction partners depending on the individual friendliness. For the “homo economicus”, the weight is zero. The friendliness spreads from one generation to the next according to natural selection. This is merely based on the own payoff, but mutations happen.

For most parameter combinations, the model predicts the evolution of a payoff-maximizing “homo economicus” with selfish preferences, as assumed by a great share of the economic literature. Very surprisingly, however, biological selection may create a “homo socialis” with other-regarding preferences, namely if offsprings tend to stay close to their parents. In such a case, clusters of friendly people, who are “conditionally cooperative”, may evolve over time. If an unconditionally cooperative individual is born

by chance, it may be exploited by everyone and not leave any offspring. However, if born in a favorable, conditionally cooperative environment, it may trigger cascade-like transitions to cooperative behavior, such that other-regarding behavior pays off. Consequently, a “homo socialis” spreads.

## 4.2 Networked Minds Create a Cooperative Human Species

“This has fundamental implications for the way, economic theories should look like,” underlines Dirk Helbing. Most of today’s economic knowledge is for the “homo economicus”, but people wonder whether that theory really applies. A comparable body of work for the “homo socialis” still needs to be written.

“While the ‘homo economicus’ optimizes its utility independently, the ‘homo socialis’ puts himself or herself into the shoes of others to consider their interests as well,” explains Grund, and Helbing adds: “This establishes something like ‘networked minds’. Everyone’s decisions depend on the preferences of others.” This becomes even more important in our networked world.

## 4.3 A Participatory Kind of Economy

How will this change our economy? Today, many customers doubt that they get the best service by people who are driven by their own profits and bonuses. “Our theory predicts that the level of other-regarding preferences is distributed broadly, from selfish to altruistic. Academic education in economics has largely promoted the selfish type. Perhaps, our economic thinking needs to fundamentally change, and our economy should be run by different

kinds of people,” suggests Grund. “The true capitalist has other-regarding preferences,” adds Helbing, “as the ‘homo socialis’ earns much more payoff.” This is, because the “homo socialis” manages to overcome the downwards spiral that tends to drive the “homo economicus” towards tragedies of the commons. The breakdown of trust and cooperation in the financial markets back in 2008 might be seen as good example.

“Social media will promote a new kind of participatory economy, in which competition goes hand in hand with cooperation,” believes Helbing. Indeed, the digital economy’s paradigm of the “prosumer” states that the Internet, social platforms, 3D printers and other developments will enable the co-producing consumer. “It will be hard to tell who is consumer and who is producer”, says Christian Waloszek. “You might be both at the same time, and this creates a much more cooperative perspective.”