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**Seminar:**

**Institutional and Evolutionary**  
**Economics**  
**(Evolutionary-Institutional Economics)**

## 2) Misconceptions of Evolution, Cont'd.

- (3) the „*fundamental theorem of (natural) selection*” (s. below)
- equivalent (has same logical structure) to a *replicator mechanism* (i.e. *pseudo-learning*)
- may be supported by an *imitation* mechanism (s. below);  
(*selection, imitation, replication* have same logical structure)
- (4) but yields a *teleological* end-state if used as the only mechanism: uniformity (e.g. same price, same costs, same profits), (quasi-) monopoly
- pure selection: end of history, stable “optimal” “equilibrium”
- (5) a first *counterexample* against an “optimal” outcome (of “optimal” individual decisions): the *collective-good/social-dilemma* problem: *fallacy of aggregation* (or: “fallacy of composition”, Samuelson/Nordhaus, Economics); also: “improving oneself to collective extinction” (J. Elster, s. G.M. Hodgson, Art. “Evolution and Optimality” re the iterated *Prisoners’ Dilemma* – PD, or PD supergame) → *unintended consequences* of interdependent individual behaviors.

## 2) Misconceptions of Evolution, Cont'd.

### „fundamental theorem of natural selection“:

$i = 1 \dots n$  individual agents, “strategies”, sub-populations or sub-cultures

$p_i$  = success or “fitness” indicator (pay-off, profit, etc.)

$p_r$  = reference success indicator (weighted *average* success, *maximum* success in the population, interaction *partner* pay-off, etc.)

$s_i$  = “market” share, population share of  $i$

$\alpha$  = selection/replication intensity parameter

$$ds_i/dt = \alpha (p_i - p_r) s_i.$$

If  $p_r = p_{av}$  = *average* success in the population, then:

$$dp_{av}/dt = f[\sigma^2(p_i)] \geq 0$$

=> uniform maximum fitness!

If  $p_r = p_{max}$  = *maximum* success occurred in the latest decision or interaction round, then

$$ds_i/dt = \beta (p_i - p_{max}) s_i$$

= *imitation* mechanism, with  $\beta$ : imitation intensity parameter.

Selection can be *accelerated* through *additional* imitation, selection and imitation can add up.

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## Core Conceptions I: Economic Evolution

### 3) Evolutionary-Institutional Understandings

- (1) *non-Panglossian*: e.g. *Th. Veblen's "institutional dichotomy"* (s. below) gives way for a *critique of "what is"*: outcomes may be purely "*ceremonial*", non-problem-solving; *unintended* outcomes
- (2) *non-teleological*: *complex* situations and processes may lead to *anywhere* but stability, optimality, and equilibrium
- the *differencia specifica* is: *direct interdependence* and interaction between (potentially *diverse*) agents, and thus complexity incl incomplete/*imperfect information*
- (3) re to *evolutionary biology*: natural environment is differentiated, composed of "niches" → *no general fitness* measure, but "multiple, local, and punctuated equilibria" (St. Gould) – "*peaks on the fitness surface*" → "no general selection principle" – no dominant strategy