

Public lecture by
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Incentives in the Family Firm

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Abstract: Social-selection theory envisions that animals often work in teams, meaning they act in coordination to pursue a team goal. To maximize team earnings, the earnings must be distributed so that members honestly communicate their knowledge to other members of the team. Economic analysis in management science has investigated incentive structures that cause employees in a firm to act in ways that maximize the firm's production.

Theodore Groves in 1973 exhibited optimal compensation rules for an organization called a conglomerate. The application of Groves result to parental investment is developed, in which the "biological conglomerate" consists of a bird's nest where the parent is the "manager" and the chicks are the "divisions." The optimal compensation rules amount to a mechanism whereby the parent "auctions" its food to the nestlings, and the nestlings indicate the price they are paying for their food by the extent of their begging behavior. The chicks signal to the parent how much demand they have for food at each price and the parent then sets the price so that all the food is consumed. This process causes the optimal strategies for the each chick to coincide with the optimal strategy of the parent, and thereby maximizes the fitness yield from the nest as a whole.

The optimal-compensation approach can be extended to predict the time of weaning ("spinning off" of divisions from the parent corporation) and to predict brood-pruning wherein brood size is reduced to accord with resources ("liquidation" of divisions).

The social-selection perspective offers the latest stage in a historical cycle of interest whether family life is naturally cooperative. Prior to the 1960's, animal family life was usually envisioned as harmonious; for the next 50 years, Geoff Parker in 2006 summarized animal family life as a "cauldron of conflict"; and now a harmonious interpretation of family life is again being proposed, this time based on cooperative game theory from the economics of industrial organization.

Joan Roughgarden is Professor of Biological Sciences and Geophysics at Stanford University. She has published more than 160 research articles, primarily in ecology, evolutionary biology, and theoretical biology. In addition to four books in these areas, Prof. Roughgarden has published biological monographs that are of interest to a wider audience. *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People* (2004) criticizes sexual selection as an explanation of animal gender roles, and *The Genial Gene: Deconstructing Darwinian Selfishness* (2009) proposes social-selection theory as an alternative framework to explain the evolution of family social dynamics.

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