



Phylogenetic footprints in organizational behavior[☆]

Ulrich Witt^{a,*}, Georg Schwesinger^b

^a Max Planck Institute of Economics, Jena, Germany

^b Institute of Institutional and Innovation Economics, University of Bremen, Germany

ARTICLE INFO

Article history:

Accepted 30 November 2012

Available online 20 December 2012

JEL classification:

B25
D03
D23
D74
M14

Keywords:

Evolution
Pre-adaptations
Group selection
Firm organization
Organizational behavior
Leadership

ABSTRACT

An evolutionary tool kit is applied in this paper to explain how innate social behavior traits evolved in early human groups. These traits were adapted to the particular production requirements of the group in human phylogeny. They shaped the group members' attitudes towards contributing to the group's goals and towards other group members. We argue that these attitudes are still present in modern humans and leave their "phylogenetic footprints" also in present-day organizational life. We discuss the implications of this hypothesis for problems arising in firm organizations in relation to the coordination and motivation of organization members.

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1. Introduction

According to a popular metaphor, firm organizations are like organisms. They have a life distinct from, but not independent of, that of their members. They develop in the course of time like natural organisms do, perhaps even analogously to their life cycle (Marshall, 1920, Book IV, Chap. 12 and 13; Penrose, 1959; Quinn and Cameron, 1983). However, biology may have more to say on organizations than is apparent in such metaphors and analogies. In the light of recent biological research on the evolution of social behavior, firm organizations and human groups more generally can be seen as yet another outcome of social evolution.

In nature, social evolution has brought forth super-organisms like colonial invertebrates, e.g. social insects, and some social mammals (Hölldobler and Wilson, 2008; O'Riain and Faulkes, 2008; Seeley, 2010). The social behavior of members of these biological super-organisms is influenced by traits that are part of their genetic endowment. These traits have been shaped through natural selection forces during the species' phylogeny (Alexander, 1974; Wilson, 2012). In the case of the members of the afore mentioned super-organisms, the genetic influence is very strong because their phenotypic plasticity is usually very limited. Modern humans, in contrast, show a great deal of plasticity. They adjust their social behavior by reinforcement and conditioning learning as animals do, albeit in a form that is much more culturally differentiated. The largest

[☆] We would like to thank Werner callebaut, John Gowdy, and David Sloan Wilson for most valuable comments on an earlier draft and Chad Baum for his research assistance.

* Corresponding author.

E-mail address: witt@evoecon.mpg.de (U. Witt).

difference is, however, in their capacity to adjust by cognitive and social learning. Nonetheless, an influence of inherited traits on human social behavior is still there and warrants the question of how it affects the way in which organizations function.

Every generation of humans is genetically endowed with basically the same emotional and cognitive apparatus with which our ancestors were already endowed. Since modifications resulting from natural selection forces are, in relation to human time scales, extremely slow, the inherited social behavior traits are most likely not much different from those of our early ancestors. Yet, the adaptive value which these traits had at those times is not necessarily present any longer under the dramatically different living conditions of today. Genetic pre-adaptations suitable to life in early human groups do not necessarily match well with the requirements of modern social life, particularly in organizations (on other cases of mismatch, see [Burnham, 2012](#)). Indeed, by recourse to hypotheses from sociobiology and evolutionary psychology, recent research in organization science has already identified several effects of pre-adaptations on social behavior. Gender-specific pre-adaptations seem to be behind such phenomena as occupational segregation ([Browne, 2006](#)) and status segregation ([Colarelli et al., 2006](#)). Organizational citizenship behavior may be due to pre-adapted behavior that signals individual superiority according to the handicap principle discussed in biology ([Deutsch Salomon and Deutsch, 2006](#)). Furthermore, leadership–followership behavior in organizations and beyond may be attributed to pre-adaptations ([Van Vugt et al., 2008](#); [Van Vugt and Ahuja, 2010](#)).

In a similar spirit, the present paper explores the importance of what we dub the “phylogenetic footprints” in organizational behavior in relation to the core problem of coordination and motivation. This dual problem is well known from the theory of the firm (see, e.g., [Witt, 2005](#)). It arises, however, wherever groups of humans (or non-humans) jointly engage in productive activities. If social behavior falls short of what is necessary to solve the dual problem, groups of individuals are unlikely to gain an advantage by forming a group. Regarding human organizations, the question thus is how social behavior traits that have been inherited from our ancestors affect coordination and motivation today.

To answer this question, we need to be more specific with respect to what the relevant traits are. Accordingly, we draw on research from evolutionary anthropology ([Boehm, 1989, 2001, 2012](#)) and ethology ([Eibl-Eibesfeldt, 1970](#)). Eibl-Eibesfeldt argues that different social behavior traits such as the selfish dispositions and the pro-social dispositions conflicting with the former, most likely originated from different phylogenetic stages. There is a legacy of our primate ancestors with their opportunistic and agonistic behavior towards their con-specifics ([Eibl-Eibesfeldt, 1997, 525–560](#)). Yet, there is also the legacy from early hominids and *Homo sapiens* with their – phylogenetically more recent – adaptations to living in groups ([Boehm, 2001, 1989](#); [Campbell, 1965](#); [Erdal and Whiten, 1994](#); [Masters, 1989](#)). These adaptations ensured degrees of coordination and motivation that, on average, brought individuals a selection advantage from forming, and cooperating within, groups.

From an economic point of view, an important condition to prevail in group competition is internal coherence. In the huge literature on group selection, this condition is interpreted mostly as a problem of motivational coherence. If group members cannot be motivated to share, help, and contribute to group goals at an adequate level of effort, individual interests such as effort minimization or exploitation of group resources would gain priority over those of the group. Motivational coherence thus requires that free riding, agonistic and, anti-social inclinations are kept in check within the group ([Wilson, 2012](#)). However, internal coherence also requires a reasonable degree of coordination in the group members' actions. Pro-social motivation alone does not ensure that the group members' activities are indeed coordinated with regard to the group's common goals. If that coordination fails, inner-group malfunctioning and frictions might spoil group action or even cause break down.

Multiple coherence requirements are thus expected to be a recurrent theme of life in groups from the early hominids to the modern organization. An understanding of the role of “phylogenetic footprints” in organizational behavior can help to improve and stabilize organizations, particularly if put in perspective with the different ways in which groups have tried to account for these requirements in human history. To make this point we proceed as follows in the remaining parts of the paper. Section 2 lays out in more detail the dual problem of coordination and motivation within groups. We draw on [Wilson and Gowdy's \(2013\)](#) “evolutionary tool kit” to explain why we use an evolutionary approach and how it helps to structure our search for “phylogenetic footprints” in organizations. Section 3 highlights the conditions under which the social behavior traits, today virulent as behavioral pre-adaptations, most likely evolved in early human groups. We discuss how coordination and motivation problems can be conjectured to have been solved in these groups. Section 4 argues that technological and institutional changes later triggered an increase in group size. We explain why, under the new conditions, a very different solution of the dual problem emerged in a cultural adaptation process. In Section 5, we turn to modern organizations (if not otherwise stated: firm organizations). We discuss what role “phylogenetic footprints” play for understanding the basic mechanisms of coordination and motivation. Referring to the previously identified influence of group size we finally address in Section 6 the effects of organizational growth on the conditions for solving the dual problem. Section 7 concludes.

2. The role of coordination and motivation for group success

All species need to produce and consume what is necessary to support their subsistence, i.e. to maintain their metabolism, and to reproduce. In some species, this is accomplished by solitary action, in others through the socially organized actions of the members of a group. *Homo sapiens* is a social species. Why did humans develop a socially organized form of production in their early phylogeny, and why did innate behavior traits evolve in humans that supported this form? In terms of [Wilson and Gowdy's \(2013\)](#) “evolutionary tool kit”, this is the question of the ultimate cause for human sociality, i.e. human dependence

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