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Better Than Rational: A Naturalistic View of Economic Governance

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The purpose of this paper is to present a recently emerging evolutionary approach to the study of human organization that I will refer to as ‘naturalistic’, and to highlight its integrative potential for the social and administrative sciences. This naturalistic approach considers the various forms of human cooperation as products of gene-culture co-evolutionary processes, and in doing so goes to the heart of the collective action problems that are central to explaining the human condition. Moreover, in building empirically grounded explanations of human behavior and organization, it also offers an alternative to the traditional view of governance in economic theory, with its emphasis on decentralized exchange and rational self-interested choice. The naturalistic approach both explains why human nature has evolved to the point where we often can do ‘better than rational’ in the face of the social dilemmas underlying collective action problems, and why modern forms of social, economic, and political organization are nevertheless always prone to being undermined by these same dilemmas.

Keywords: Collective action; Institutional economics; Evolutionary theory; Multi-level selection; Gene-culture co-evolution

“Economic transactions take place not only in markets, but also within firms, associations, households, and agencies. Whereas economic theory has comprehensively illuminated the virtues and limitations of markets, it has traditionally paid less attention to other institutional arrangements.” (From the press release announcing The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009)ⁱ

“While no full-blown theory of collective action yet exists, evolutionary theories appear most able to explain the diverse findings from the lab and the field and to carry the nucleus of an overarching theory.” (Ostrom, 2000: 138)

1. Introduction

Much to the surprise of many economists, in 2009 political scientist Elinor Ostrom earned a Nobel Prize in economics for helping bring “economic governance research from the fringe to the forefront of scientific attention”.ⁱⁱ By awarding her this prize, the Economic Sciences Prize Committee recognized Ostrom’s work as a fundamental contribution to ‘institutional economics’: the analysis of the ‘sets of rules that govern human interaction’. Both her work on governing the commons and that of her co-recipient economist Oliver Williamson on transaction cost economics, were seen as addressing “head-on the challenges posed by the 1991 Laureate in Economic Sciences, Ronald Coase ... [w]hat exactly do organizations such as firms and associations accomplish that cannot be better accomplished in markets?”

In this paper I argue that this fundamental question is best answered from what I will refer to as a ‘naturalistic’ perspective, that is, by considering human behavior and organization as the result of gene-culture co-evolutionary processes (cf. Stoelhorst & Richerson, 2013). I believe this perspective is in line with Ostrom’s general outlook on economic governance (cf. Wilson, Ostrom



& Cox, 2013). As the quote from her work at the beginning of this paper testifies, she saw evolutionary theory as the most promising candidate for the development of a general theory of collective action. By awarding her the Nobel, the Economic Sciences Prize Committee put Ostrom's work squarely in a long, if quite diverse, tradition of institutional analysis in economics that includes the early 20th century American Institutionalism of Veblen and Commons, the New Institutionalism of Coase, Williamson and North, as well as more recent evolutionary game theoretic work (for recent reviews of these three traditions, see, respectively, Hodgson & Stoelhorst, 2014; Menard & Shirley, 2014; Hodgson & Huang, 2012). Ostrom's work can thus be seen as bridging the interests of political and administrative scientists (the main audience of this journal) and economics research on institutional complexity and evolution (the topic of this special issue). But in addition to this, her work also links in with a recent interdisciplinary stream of research at the intersection of biology, psychology, anthropology, sociology, and economics that studies human cooperation by combining gene-culture co-evolutionary arguments with a multi-level selection perspective (e.g. Bowles & Gintis, 2011; Haidt, 2012; Nowak, 2011; Wilson, 2012). The main purpose of this paper is to show the relevance of this latter stream of research for institutional analysis and design.

As this stream of research is still somewhat fragmented, my first goal is to bring together what I consider to be its main insights into human behavior and organization, and to articulate the naturalistic perspective on economic governance that these insights suggest. My second goal is to detail how this naturalistic perspective differs from the traditional view of governance in economic theory, with its emphasis on rational choice, self-interest, and arm's length market transactions as the key to economic welfare (cf. Gowdy et al., 2013).ⁱⁱⁱ While the fact that the naturalistic perspective takes us away from some cherished notions in traditional economic theory may make it a relatively difficult 'sell' to many economists and political scientists, it has the important advantage that it is consistent with the empirical evidence on actual human behavior and organization from both the lab and the field. In particular, a naturalistic perspective explains how evolved behavioral dispositions allow humans to often do 'better than rational' (Ostrom, 1998) in the face of the social dilemma's underlying collective action problems. In doing so, it also suggests a very specific answer to Coase's question as posed by the Nobel Prize committee: what 'firms, associations, households, and agencies' accomplish that cannot better be accomplished in markets is to help us create economic welfare by triggering evolved behavioral dispositions that allow us to overcome our short-term self-interest.

To substantiate this answer to Coase's question, I will below first articulate a redefinition of the problem of economic governance as it has traditionally featured in economic theory. In particular, I will argue that the social dilemmas underlying collective action problems are much *more* central than most economic theory assumes, because they do not only affect the provision of public but also of private goods. At the same time, I will also argue that their solution is *less* problematic than typically thought, because of differences between the behaviors of the stylized *Homo economicus* featuring in traditional economic models and actual *Homo sapiens*. I will subsequently ground these claims in insights into the nature of human cooperation from evolutionary theory. I will argue that the main problem in sustaining human cooperation is not our alleged self-interest, but the evolutionary mismatch between our evolved moral and social psychology, on one hand, and the scale of modern human organization, on the other. More specifically, the main problem of human cooperation is not to have rational self-interested agents play 'cooperate' in social dilemmas. It is rather to design institutions that trigger evolved behavioral dispositions that put *bounds* on pursuing our short term self-interest, even if these dispositions originally evolved to sustain cooperation on a much smaller scale.

2. The Problem of Economic Governance Redefined

From Adam Smith, via Walras and the marginal revolution, to general equilibrium models and welfare economics, the canonical view of human cooperation in economic theory is of the ‘Invisible Hand’ of the market guiding the actions of self-interested agents towards an outcome that maximizes the collective interest. This view models markets as perfectly decentralized systems that consist of rational agents interacting through arm’s-length competitive exchanges (Demsetz, 1988). One of its undeniable attractions is that it posits a system that will maximize collective welfare on the basis of an automatic, bottom-up, self-organizing process – and that it does so despite the self-interested nature of its constituent agents.^{iv} The policy implications are clear: to maximize economic welfare, institutions should facilitate decentralized exchange, for instance through enforcing individual property rights and promoting free markets.

One of the problems with this view on economic governance was recognized relatively early on: markets will not be able to coordinate the actions of rational self-interested agents to provide public goods (Samuelson, 1954). In contrast to private goods, which are competitive and (assuming institutions that effectively enforce property rights) excludable, public goods are non-competitive and non-excludable. Given these characteristics, a rational self-interested agent will recognize that the optimal course of action is to free-ride on the contributions of others, which means that a decentralized system will not be able to provide public goods. In other words, for as far as economic welfare also depends on the provision of public goods, a decentralized system of self-interested rational agents will *not* maximize social welfare. This is particularly troubling because securing property rights, a precondition for perfect decentralization to work, is itself a public good.

The solution to the provision of public goods proposed in economic theory is perfect centralization, the provision of the public good by a central authority that imposes a tax on the individual agents in the system to provide the public good. In combination with perfect decentralization, the idea of perfect centralization defines the ‘two goods, two systems’ view of economic governance that forms the theoretical backdrop against which Ostrom’s Nobel Prize in economics can be understood (see Figure 1).

	Public goods (centralization)
Private goods (decentralization)	

Figure 1: The traditional two goods, two systems view

As Ostrom explained, an important part of her contribution to our understanding of economic governance was to demonstrate that this ‘two goods, two systems’ view is too limited (Ostrom, 2010). There are not two but four types of goods, and, as scholars in public administration have long realized, the provision of these additional goods typically involves ‘polycentric’ governance rather than perfect (de)centralization, which is to say that a diverse array of public and private agencies is involved in providing them (see Figure 2).

		Subtractability	
		High	Low
Excludability	Low	CPRs	Public goods
	High	Private goods	Toll goods

Figure 2: From two to four goods, after Ostrom (2010)

What Figure 2 does not capture is that the problem with the ‘two goods, two systems’ view of economic governance runs much deeper. Figure 2 could be interpreted as proposing that economic governance involves perfectly decentralized markets for the provision of private goods, perfect centralization for the provision of public goods, and polycentric solutions for the provision of common pool resources and toll goods.^v But a more realistic picture of economic governance would dispense with perfect centralization and perfect decentralization altogether. First, consider the notion of perfect decentralization as the way to provide private goods. Perfect decentralization assumes that individual agents only interact through arm’s-length market transactions. But this is not how most private goods are provided: firms play a central role in this process and they are themselves solutions to a collective action problem that has been referred to as ‘team production’ (Alchian & Demsetz, 1972).^{vi} In other words, in contrast to the unitary agent view of firms in traditional economic models, firms are in fact cooperative entities consisting of multiple agents with conflicting interests. Second, consider the notion of perfect centralization as the way to provide public goods. Perfect centralization assumes a single benevolent, omniscient, and omnipotent central agent.^{vii} But, again, this is not how government works. Governments are collections of agencies whose existence and interplay throw up collective action problems of their own.

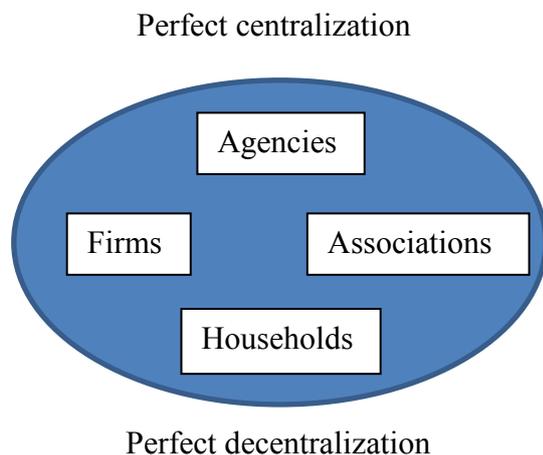


Figure 3: A naturalistic view (concepts of perfect (de)centralization are useful theoretical benchmarks, but the provision of all goods involves social dilemmas, which are solved in the polycentric context of households, firms, associations, and agencies)

The actual landscape of economic governance is more like Figure 3. This figure explicitly captures the fact that perfect centralization and decentralization are merely useful theoretical abstractions, and that *all* economic governance is a matter of polycentric solutions to collective action problems at different levels of analysis. In reality there is no such thing as perfect centralization or perfect decentralization. ‘Households, firms, associations and agencies’ are all manifestations of solutions to collective action problems. In other words, it is not just that the actual landscape of economic governance is more complicated than the picture painted in the ‘two goods, two systems’ view. The problem is rather that this view fundamentally misrepresents that landscape. Economic welfare is not the result of competition among individual agents facilitated by a benevolent designer imposing the rules of competition from above. Economic welfare is the result of bottom-up interactions among agents that allow them to reap the benefits of cooperation by forming functional groups. It is not that competition does not play an important role in this process, but not all of this competition is guided by markets. Moreover, when it is, competition is mostly between groups of individuals such as firms, which first need to solve the social dilemma

of team production to have products or services to compete with at all. In other words, whether it is the provision of private goods by firms (Alchian & Demsetz, 1972), the provision of public goods (Samuelson 1948) and club goods (Buchanan, 1965), or the governance of common pool resources (Hardin 1968; Ostrom 1990), in *all* cases the central problem of economic governance is to overcome social dilemmas.^{viii}

3. The Ultimate Explanation of Human Cooperation

How humans are able to overcome social dilemmas is exactly the question that is at the core of the naturalistic perspective on human behavior and organization that is emerging at the intersection of the natural and social sciences (Stoelhorst & Richerson, 2013). In the context of evolutionary theory, cooperation in general, let alone the unique nature of human cooperation, poses a fundamental problem for reasons that are similar to why it is a problem for economic theory. In fact, the traditional emphasis on decentralized competitive exchange among rational self-interested agents in economics (i.e. the role of markets in coordinating human action) reflects the baseline model of biological evolution as a process driven by competition for scarce resources among individual organisms: the Darwinian variation-selection-retention algorithm underlying biological evolution can only reward behaviors that are in individual organisms' self-interest (i.e., allowing them to pass on more of their genes to future generations). Given this algorithm, how can cooperative behaviors evolve at all?

In answering this question, evolutionary theory makes an important distinction between ultimate and proximate explanations (Mayr, 1961). A *proximate* explanation accounts for behaviors in *mechanistic* terms and explains *how* behaviors come about. For instance, a proximate explanation of cooperative behaviors in public good games may invoke strong reciprocity – the tendency of human agents to reward cooperative behaviors and punish uncooperative behaviors, even when doing so comes at a personal cost (Fehr & Gintis, 2007). Such a proximate explanation needs to be complemented by an *ultimate* explanation that accounts for *why* behaviors such as strong reciprocity, which are at odds with rational self-interest, may have evolved. An ultimate explanation explains behaviors in *functional* terms: it shows how particular behaviors can increase an individual organism's fitness. Over the last 50 years, evolutionary theory has identified five mechanisms that can explain the evolution of cooperation (Nowak, 2006): kin selection, or inclusive fitness theory (Hamilton, 1964), direct reciprocity (Trivers, 1971; Axelrod, 1984), indirect reciprocity (e.g. Alexander, 1987), network reciprocity (Ohtsuki et al., 2006) and group selection, or multi-level selection theory (e.g. Sober & Wilson, 1998).^{ix}

All five mechanisms are likely to have played a role in the evolution of the human ability to cooperate, but the crux of the ultimate explanation of human cooperation seems to lie in a combination of multi-level selection (Sober & Wilson, 1998; Wilson & Wilson, 2007) and gene-culture co-evolution (Boyd & Richerson, 1985; Richerson & Boyd, 2005). What makes humans unique is that we can sustain very large-scale cooperation among non-kin. This empirical fact rules out explanations in terms of kin selection or reciprocity alone. Kin selection cannot explain that human cooperation extends to individuals that are not genetically related. Direct reciprocity cannot explain the large scale of human cooperation, because cooperation based on reciprocity quickly breaks down when group size increases (Boyd & Richerson, 1988). Even indirect reciprocity fails in the face of the empirical evidence about human cooperative behaviors, because humans even display cooperative behaviors in one-shot interactions with anonymous strangers without reputation effects (e.g. Fehr and Fischbacher, 2003).

To explain such behaviors, we need to turn to multi-level selection theory, in which groups as well as individuals are units of selection (cf. Sober & Wilson, 1998; Wilson & Wilson, 2007). This theory recognizes that individual organisms are often organized in larger functional groups. Whenever this is the case, we need to distinguish the selection pressures from within-group competition for scarce resources, which favor behavior that is beneficial to the individual, on the one hand, and selection pressures from between-group competition for scarce resources, which favor behavior that is beneficial to the group, on the other hand. Note that this distinction mirrors the structure of a social dilemma, where free-riding is the behavior that is beneficial to the individual, and cooperating the behavior that is beneficial to the group. The crux of multi-level selection theory is that whenever individuals are organized into groups that compete with each other, the net selection effect of within-group competition and between-group competition may actually favor genes that code for within-group cooperative behaviors.

Although the evolution of cooperation on the basis of multi-level selection acting on genetic evolution alone is possible (Sober & Wilson, 1998), the explanatory value of the multi-level selection framework is much increased if, in addition to genetic mechanisms, we allow cultural mechanisms to play a role as well (e.g. Bell et al., 2009; Henrich, 2004). Doing so leads to the following explanation of the origins of the unique human ability to cooperate (cf. Bowles & Gintis, 2003; Henrich, 2004; Richerson & Boyd, 2005). In the between-group competition for scarce resources among our tribal ancestors it was not only the genes of the individuals within the group that were selected for, but also their culturally transmitted ideas and behaviors. *Ceteris paribus*, groups that evolved cultures that supported cooperation could out-compete other groups, and cultures that favored cooperation spread. Moreover, these cultures changed within-group selection pressures to favor genes that predispose humans to cooperative behaviors. As a result, humans are a highly group-selected species: over evolutionary history we became social animals with moral instincts conducive to solving social dilemmas and sustaining cooperation among non-kin.

4. Proximate Explanations of Human Cooperation

If, as the naturalistic view asserts, we are a moral rather than a purely self-interested species, then how do our moral instincts manifest themselves? They do, for instance, in a host of findings in behavioral economics and social psychology demonstrating that humans facing social dilemma games do not, on average, behave as theories of rational self-interested choice would predict (see Van Lange et al., 2013 and Van Lange et al, 2014 for reviews). One specific example of this is the finding already mentioned above, that in public good games many people play as ‘strong reciprocators’ rather than as ‘rational self-interested agents’: they reward others’ cooperative behaviors and punish others’ uncooperative behaviors, even if this comes at a personal cost (Fehr & Gintis, 2007).^x Strong reciprocity is clearly at odds with maximizing self-interest and is especially relevant for our understanding of economic governance because it occurs in the context of a game that mirrors the basic pay-off structure of team production, common pool resource management, and the provision of public goods.

The most likely ultimate explanation for such seemingly irrational behavior is the combination of multi-level selection and gene-culture evolution summarized above. In fact, it has been argued that most, if not all, of our social and moral psychology has evolved to help us sustain norms that facilitate within-group cooperation in the context of between-group competition (Greene 2013; Haidt 2012; Richerson & Boyd, 2005). On this view, our social behaviors are the result of adaptations that originally emerged to sustain cooperation in the small-scale societies in which our ancestors lived for most of human evolutionary history. These behaviors not only

include strong reciprocity (related to maintaining within-group cooperation), but, for instance, also gossiping (related to cheater detection and reputational mechanisms) and in-group favoritism and out-group aggression (related to between-group competition) (Haidt, 2012; Greene, 2013). The proximate explanations of such behaviors, in turn, are the neural mechanisms causing the emotions that trigger and reinforce these behaviors (Fehr & Camerer, 2007). Examples of this are guilt and shame (related to observing group norms oneself), anger and contempt (related to punishing others that do not observe group norms), and feelings of reward when punishing non-cooperators (Greene, 2013).

Thus, while the ultimate function of our moral psychology is to help us overcome social dilemmas, the proximate effect is to put bounds on the pursuit of our self-interest. Theories of the nature of these bounds invoke other-regarding preferences (meaning that individuals do not just care about their own outcomes but also about the outcomes for others) and preferences for fairness (such as reciprocal fairness and inequity aversion).^{xi} What these explanations have in common is that they posit internal pressures that can be thought of as changing the pay-off matrix that a rational self-interested player would perceive to one in which cooperation actually becomes the ‘rational’ strategy (Van Lange et al., 2014). *Homo sapiens* does not play like *Homo economicus* because we have the ability to internalize moral norms that make us ‘better than rational’ at solving social dilemmas. Moreover, our psychology is rich in neural mechanisms that trigger various emotions that make us behave in ways that help us reinforce these norms.

While it is, therefore, not the case that the actual behaviors of *Homo sapiens* correspond to our *Homo economicus* typecasting in traditional economic theory, neither is it the case that our behaviors correspond to a view of our species as *Homo sociologicus*, whose internalized norms always lead to norm-regarding behavior (Fehr & Gintis, 2007). For instance, results from public good games show that 30% of subjects do not contribute to the public good and free-ride on the contributions of others, while 50% of subjects cooperate conditionally, meaning that they contribute to the public good as long as others are doing so (Fischbacher, et al., 2001). In other words, a substantial minority of individuals does in fact behave in line with the assumptions of standard economic theory, at least in the context of the anonymous interactions of lab experiments with public goods. But the majority of individuals does not, and, crucially, given the opportunity to punish free riders, even if this punishment is costly and even in the context of anonymous interactions, it is the majority’s tendency to cooperate that prevails (e.g. Fehr & Gächter, 2000).

A suggestion that may offer an additional key to the proximate explanation of these results is that human behavior may be guided by two competing neural pathways (cf. Boone, et al., 2008; Declerck, et al., 2013) that we could label ‘strategic’ and ‘moralistic’. While the two pathways can be active in parallel, one of the two will ultimately dominate and inform actual behavior. The strategic pathway is more likely to result in self-interested behaviors, while the moralistic pathway is needed for the regulation of social relationships (Rai & Fiske, 2011) and is more likely to trigger positive and negative reciprocity. If this is indeed how the human mind works, it raises interesting questions about how environmental cues may contribute to the dominance of one or the other pathway, and thus trigger different individual behaviors and, ultimately, collective outcomes. For instance, the finding that labeling a prisoners dilemma game ‘The Community Game’ or ‘The Wall Street Game’ affects cooperation, with significantly higher cooperation in the community game (Lieberman, et al., 2004), seems to be consistent with this. Findings like this are particularly rich in implications for the administrative sciences, because they suggest that institutions may affect the level of cooperation in social dilemmas by triggering different neural pathways.^{xiii}

5. A Naturalistic View of Economic Governance

What do the arguments above mean for economic governance? The first three rows of Table 1 summarize the main points made so far, namely that social dilemmas are both more central to economic governance and less problematic to solve than traditional economic theory has assumed. They are more central because economic welfare crucially depends on solving collective action problems, even in the provision of private goods. Most private goods require firms to produce, and the viability of firms depends on agents solving team production problems. At the same time, social dilemmas are less problematic to solve than traditional economic theory assumes, because for all of human evolutionary history our biological and economic success has depended on solving collective action problems like team production. As a result, human psychology has evolved in ways that help us overcome the social dilemmas that emerge when our individual interest in within-group competition diverges from the collective interest in between-group competition.

	Traditional view	Naturalistic view
Main cause of welfare	Arm's length exchange (Independent action)	Collective action (Mutual dependence)
Nature of competition	Single-level selection (Competition between individuals)	Multi-level selection (Competition between individuals and groups)
Behavioral assumption	Self-interest	Bounded self-interest
The function of institutions	To facilitate decentralized exchange among self-interested agents	To help boundedly self-interested agents overcome social dilemmas
What institutions are	Single rule complexes imposed top-down	Competing rule complexes evolving bottom-up
What undermines institutions	Self-interest	Evolutionary mismatch
Policy focus	Secure property rights and provide other public goods	Keep competition peaceful and leaders honest

Table 1: A comparison of the traditional and naturalistic views of economic governance

Note that the claim that social dilemmas are *less* problematic than traditional economic theory assumes does not mean that they are *un*problematic. In fact, the crux of multi-level selection theory is that it acknowledges the tension between individual and group interest, meaning that functional groups are always vulnerable to being undermined by self-interested behavior (Campbell, 1994). Nevertheless, a naturalistic view on human behavior and organization does suggest a fundamental redefinition of the problem of social dilemmas in economic governance: the problem of economic governance is not how to get self-interested agents (*Homo economicus*) to play cooperate in the face of social dilemmas, but how to get boundedly self-interested human beings (*Homo sapiens*) to do so.

This is where the role of institutions comes in, as summarized in the last four rows of Table 1. The purpose of institutions is not primarily to facilitate competition among individual self-interested agents, but to help boundedly self-interest humans overcome social dilemmas. Institutions, be they formal or informal, achieve this through the 'rules of the game' they impose on us. These rules work in one of two ways (alone or in combination): by triggering the bounds on

our self-interest that change the pay-off matrix from *within* (i.e., by appealing to our moral sentiments), and/or by changing the pay-off matrix from *without* (i.e., by some form of punishment). In contrast to traditional economic theory, when considering the latter mechanism there is no presumption of a benevolent designer that can impose a set of rules from the *top down*. Rules complexes rather evolve from the *bottom up*, as the result of competition between individuals and, at higher levels of analysis, competition between groups. One immediate implication of this is the explicit recognition that institutions are politically contested, and that the rules they impose are historically and culturally specific phenomena that may favor the interests of particular subgroups.

Another implication of a naturalistic view of institutions is that it points in a fundamentally different direction when it comes to the problem at the core of designing effective institutions. This problem is not so much humanity's presumed self-interest, but 'evolutionary mismatch'. The idea of evolutionary mismatch is that while our social and moral psychology evolved in ways that help us overcome our short-term self-interest, this psychology is the result of solving social dilemmas in the small-scale societies in which our evolutionary ancestors lived. As a species we are particularly good at solving social dilemmas in the context of relatively small groups where face-to-face contact, reputation effects, and group identities allow for ways to discipline possible free riders. But our psychology is not necessarily particularly well-adapted to the large-scale, complex societies with their often anonymous interactions in which we live today. In the popular rendition of this core idea of evolutionary psychology, we are constructing our modern worlds on the back of 'Stone Age minds' – and the two do not always match.

Two problems, in particular, stand out as obvious effects of evolutionary mismatch. The first is the problem of keeping competition, and particularly between-group competition, peaceful. Because our psychology evolved in the context of between-group competition, our cooperative tendencies tend to be much stronger for in-group members, and, in fact, often go hand-in-hand with outright aggression to out-group members (Greene, 2013). The second is the problem of keeping leaders honest. While our evolutionary ancestors were very successful in maintaining egalitarian societies (Boehm, 1993), this has changed dramatically since, some 10.000 years ago, the Agricultural Revolution started the process of increasing the scale of our societies. One of the defining features of the tribal cultures with which our psychologies co-evolved was that they were very effective in keeping in check those who would want to emulate the 'alfa male' behaviors of many other primate species (Boehm, 1993). The fact that the increasing scale of our societies went hand-in-hand with an increasing stratification turned this feature of human societies on its head. These two manifestations of evolutionary mismatch, out-group aggression and the tension between our evolved egalitarian preferences and the tendency towards inequality in large-scale societies, present themselves as even more fundamental issues for institutions to solve than providing public goods such as property rights. Attempts to provide public goods can at least appeal to aspects of our psychologies that specifically evolved to help us solve the social dilemmas involved. But in the case of the two evolutionary mismatch problems, our evolved psychologies are actually the root cause of the problem.

6. Implications for the Administrative Sciences

What does the emerging naturalistic view on human behavior and organization mean for the administrative sciences? Two interrelated claims have been made about the potential value of the naturalistic view, and both are especially relevant for the administrative sciences, which are by nature interdisciplinary and applied. The first claim relates to the interdisciplinary nature of the



administrative sciences, and is that a naturalistic view offers an integrative paradigm for the social sciences (e.g. Fehr & Gintis, 2007; Fowler & Schreiber, 2008; Gintis, 2006; Mesoudi, Whiten & Laland, 2006; Stoelhorst & Richerson, 2013; Wilson and Gowdy, 2013). For instance, Gintis (2007: 1) argues that a naturalistic view offers the “analytical and empirical bases to construct the framework for an integrated behavioral science” that can reconcile the ‘distinct and incompatible ways’ in which the various behavioral and social sciences have modeled human behavior. Reconciling incompatible models of human behavior, such as the *Homo economicus* and *Homo sociologicus* views, is especially important for the coherence of interdisciplinary fields like the administrative sciences that build on a variety of behavioral and social sciences and that are therefore particularly susceptible to importing conflicting assumptions about human behavior into their theories.

The second claim relates to the applied nature of the administrative sciences, and is that a naturalistic view offers a foundation for a ‘science of intentional change’ (Wilson, et al., 2014). The basic idea underlying this second claim is that “examples of successfully managed behavioral and cultural change at scales ranging from individuals to small groups and large populations” are “examples of managing evolved mechanisms of phenotypic plasticity” (Wilson, et al., 2014: 395). ‘Phenotypic plasticity’ refers to the ability of organisms to respond adaptively to changes in their environments during their life time. This ability is particularly well-developed in humans because of our capacity for symbolic communication. Wilson et al.’s (2014) claim is that, in addition to our genotype, networks of symbolic relations also regulate human behavior.^{xiii} Applying this view to the arguments in this paper leads to the suggestion that the applied nature of the administrative sciences can be thought of as a concern with understanding how institutions can be intentionally designed so that the networks of symbolic relations that they represent facilitate human cooperation.

Some important building blocks for this understanding are brought together in relational models theory (Fiske, 1991, 1992). Relational models are models that people use (unselfconsciously) “to plan and to generate their own action, to understand, remember, and anticipate others’ action, to coordinate the joint production of collective action and institutions, and to evaluate their own and others’ actions” (Fiske, 2004: 3). The four relational models are Communal Sharing (a relationship of unity, community, and collective identity), Authority Ranking (a relationship of hierarchical differences, accompanied by the exercise of command and complementary display of deference and respect), Equality Matching (a relationship among equals manifested in balanced reciprocity), and Market Pricing (a relationships where people compute cost/benefit ratios and pursue their self-interest) (Fiske, 1991). These models are not only cognitive schemata, but also comprise needs, motives, evaluative attitudes and judgments, as well as emotions, all of which trigger different behaviors in social interactions because they make different relational self-representations salient (“Who am I in relation to the other(s)?”) that are associated with different needs and motivations and involve different rules of behavior (“What is appropriate behavior for myself and the other in this social interaction?”) (Fiske, 1991).

Relational models theory holds that four models suffice to generate the very high diversity in social relationships observed in practice (Fiske, 1991). Seen within the broader framework of a naturalistic perspective on human behavior, the four relational models may be understood as the elemental building blocks that enable and constrain the symbolic relations that, in addition to our genotype, govern human behavior. They enable them because of their combinatorial potential and flexibility with respect to the specific rules that they allow, but they also constrain them because they are the result of deeply ingrained aspects of our evolved social and moral psychology. If this is indeed true, then we must evaluate institutions in terms of the specific (combination of) relational models that they trigger. And if we want to intentionally guide the evolution of

institutions in ways that allow us to create more economic value, then we must ask how triggering each of the four relational models will affect individuals' behaviors in the context of social dilemmas.

Bridoux and Stoelhorst (2016) is an attempt to answer this question for the case of team production. It argues that of the four relational models, Market Pricing, the model that traditional economic theory emphasizes as most conducive to furthering our economic welfare, is actually the model that is least conducive to solving social dilemmas. In fact, Market Pricing *exacerbates* social dilemmas because it appeals to parts of our psychology that are likely to trigger strategic as opposed to moralistic reasoning. Whereas the other three models trigger interpersonal identities and other-regarding motivations, Market Pricing triggers self-interest. This prediction is borne out by a host of empirical findings (e.g. Bowles, 2008). Thus, for as far as our economic welfare depends on solving social dilemmas, as a naturalistic perspective on economic governance suggests it does, traditional economic theory, with its emphasis on markets, may be pointing the administrative sciences in the wrong direction with respect to the types of institutions that we should be designing. If our economic welfare fundamentally depends on appealing to the bounds on our self-interest, then institutions that make us frame our social relationships in terms of Market Pricing would in fact achieve the opposite, and we would do well to design institutions that help us frame our social relations more in terms of Authority Ranking, Equality Matching, and especially Communal Sharing, because it is these frames, as opposed to Market Pricing, that trigger our moral sentiments.

7. Conclusion

I hope to have achieved three things. The first is to present the main elements of the naturalistic perspective on human behavior and organization that is emerging from work at the intersection of the biological and social sciences that is grounded in gene-culture co-evolution and multi-level selection. The second is to show that this perspective offers an empirically-grounded alternative to the traditional economic research paradigm with its emphasis on decentralized exchange among rational self-interested agents as the key to economic welfare. The third is to suggest how this alternative paradigm can inform the administrative sciences.

Social dilemmas are both more central to economic governance and less problematic to solve than traditional economic theory has assumed. They are more central because economic welfare crucially depends on solving collective action problems – not just because these problems play a role in the provision of public goods, but also because they play a role in the provision of most private goods, which typically involve team production. Humans solve these collective action problems through establishing functional groups like households, firms, associations, and agencies. This means that the competitive landscape that drives our economic welfare is fundamentally misrepresented if we think of it in terms of single-level competition among individual agents, as traditional economic theory does. The actual landscape is one of both within-group and between-group competition, and has been for all of human evolutionary history. As a result of this long history, our psychology includes evolved dispositions that put bounds on our self-interest, which help us to overcome the social dilemmas that stand in the way of forming functional groups.

Commenting on Ostrom's Nobel Prize, economist Paul Romer noted the following: Most economists think that they are building cranes that suspend important theoretical structures from a base that is firmly grounded in first principles. In fact, they almost always invoke a skyhook, some unexplained result without which the entire structure collapses ... A typical conclusion [is]



that rules that assign property rights and rules that let people trade lead to good outcomes. What's the skyhook? That people will follow the rules. Why would they respect the property rights of someone else? [Economists] may have in mind something like this: police officers will arrest people who don't follow the rules. But this is just another skyhook. Who are these police officers? Why do they follow rules? ... Economists who have become addicted to skyhooks find it hard to even understand what it would mean to make the rules that humans follow the object of scientific inquiry. If we fail to explore rules in greater depth, [we] will have little to say about the most pressing issues facing humans today ... Cheers to the Nobel committee for recognizing work on one of the deepest issues in economics. Bravo to the political scientist who showed that she was a better economist than the economic imperialists who can't tell the difference between assuming and understanding.^{xiv}

Cheers and bravo as well for Ostrom's (2000) early recognition of evolutionary theory's potential to develop an overarching theory to address this fundamental issue. As I hope to have shown, there has been substantial progress on developing such a theory since 2000, and as the still somewhat disparate findings from research on human cooperation from an evolutionary perspective are being brought together we are not just beginning to see the contours of an overarching theory, but indeed of an integrative research paradigm for the social sciences. Applied to Coase's question as paraphrased by the Nobel Prize committee, 'what do organizations such as firms and associations accomplish that cannot be better accomplished in markets?', this paradigm leads to the unambiguous answer that firms and associations, as well as other collectives like households and agencies, are vehicles to overcome the social dilemmas underlying collective action problems. What they accomplish is to provide contexts that trigger the moralistic neural pathways that allow us to sustain cooperative social relations.

Perhaps even more important than this basic insight is the fact that a naturalistic perspective leads to the conclusion that the Coasean question is simply misdirected, or at least *misdirecting*, in presuming the primacy of markets. While evolutionary theory also takes competition as its starting point, a naturalistic perspective on human behavior and organization acknowledges that competition has long, long ago been complemented with, and in many ways been superseded by, cooperative arrangements – and that these cooperative arrangements explain the bulk of our economic progress. The landscape of economic governance is one of multi-level competition in which organizations dominate markets. It is a landscape that, as Simon (1991) observed, a Martian visiting Earth, unaware of reigning economic theory, would no doubt describe as an 'organizational economy' rather than a 'market economy'. Moreover, economic theory's traditional emphasis on markets over organizations as the key to economic welfare is far from neutral. For organizations to function, our institutions need to trigger the moralistic processes that put bounds on our self-interest. The logic of markets, by triggering strategic reasoning, does the opposite. Thus, a naturalistic view suggests that traditional economic theory may have been pointing the administrative sciences in the wrong direction when it comes to designing institutions that further our economic welfare.

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Endnotes

- ⁱ http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/press.html
- ⁱⁱ The quotes in this paragraph are either from the press release of the 2009 Prize in Economic Sciences in Memory of Alfred Nobel (see previous footnote) or from the advanced information:
http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/advanced.html
- ⁱⁱⁱ My focus on economic theory is in line with the topic of this special issue, but comes at the expense of ignoring related discourses in the social sciences on institutions (e.g. Hall & Taylor, 1996), evolutionary arguments (e.g. Sanderson, 2007) and complexity (e.g. Byrne & Callaghan, 2014).
- ^{iv} The other attractions are that it can be modelled relatively easily and that it implies a world in which agents have maximum individual freedom.
- ^v Toll goods are Ostrom's term for what economists had referred to as 'club goods'.
- ^{vi} The problem of team production occurs when there are complementarities between agents' inputs in the production process, so that the collective output is more than the sum of the individual inputs. Note that this is the case in most production. This situation creates a metering problem in the sense that it becomes very costly, or even impossible, to assess the marginal contributions of individual agents to the collective output. This creates a social dilemma akin to the public good dilemma: as the market can only 'reward' the collective output, the individual incentive becomes to free ride on the contributions of others (i.e. minimizing one's own effort while still sharing in the spoils of the collective output). Alchian & Demsetz (1972) explain the existence of firms as the result of the need to solve this problem. This is a different (and ultimately much more convincing) explanation than the one offered by Coase and, by extension, Williamson, Ostrom's co-recipient of the 2009 Nobel (cf. Demsetz, 1988). Blair and Stout (1999) offer a more fully developed team production theory of the modern corporation.
- ^{vii} In the words of Sudgen (1986: 3, emphasis in original) "Most modern economic theory describes a world presided over by a *government* (not, significantly, by governments), and sees this world through the government's eyes. The government is supposed to have the responsibility, the will and the power to restructure society in whatever way maximizes social welfare; like the US Cavalry in a good Western, the government stands ready to rush to the rescue whenever the market "fails," and the economist's job is to advise it on when and how to do so."
- ^{viii} Van Lange et al. (2014: 8) define social dilemmas as 'situations in which a non-cooperative course of action is (at times) tempting for each individual in that it yields superior (often short-term) outcomes for self, and if all pursue this non-cooperative course of action, all are (often in the longer-term) worse off than if all had cooperated'. This definition includes Prisoner's dilemmas, Chicken/Hawk-Dove dilemmas, and Assurance/Trust dilemmas.
- ^{ix} All five mechanisms explain how the (long-term) benefits of cooperation in terms of fitness can overcome the (short-term) costs incurred by the individual displaying the cooperative behavior. In shorthand, kin selection explains cooperation in terms of genetic relatedness, direct reciprocity in terms of tit-for-tat, indirect reciprocity in terms of reputation mechanisms, network reciprocity in terms of assorting, and multi-level selection in terms the tension between within-group selection and between-group selection.
- ^x For some qualifications of the more extreme interpretations of the work on strong reciprocity, see Hagen & Hammerstein (2006) and Guala (2012).
- ^{xi} See Fehr & Gintis (2007) and Gintis, et al. (2003) for summaries from the perspective of economic theory, and Van Lange, et al. (2013) for summaries from the perspective of social psychology.
- ^{xii} These findings also begin to address some of the reservations of Hagen and Hammerstein (2006) about current interpretations of positive and negative reciprocity in experimental games.
- ^{xiii} Wilson et al. (2014: 400) refer to networks of symbolic relations as 'symbotypes', which they describe as 'tacit systems of higher-order relations' that become independent of the physical objects originally triggering these relations, and that are 'maintained by their utility, coherence, and role in a social community'. This is not unlike institutions, which regulate behavior by defining the rules of human interaction.
- ^{xiv} <http://paulromer.net/skyhooks-versus-cranes-the-nobel-prize-for-elinor-ostrom/>