Roots of Procedural Fairness[1]

Lívia Markóczy

Anderson Graduate School of Management
University of California, Riverside
Ph: +1 909 787-3908
F: +1 909 787-3970
Livia.Markoczy@ucr.edu
http://www.goldmark.org/livia/

Jeffrey Goldberg

Ph: +1 909 780-6971
Jeffrey@goldmark.org
http://www.goldmark.org/jeff/

Andrew Chen

University of California, Riverside

Version 2.21
June 25, 2004

Abstract

We propose that human concern for procedural fairness is rooted in two senses: (1) a desire for social stability and (2) an opposition to abuse of power. This resolves the puzzle of how an apparently naturally selected human characteristic could arise when the conditions for it have existed for less then a few thousand years. The extent to which people are concerned about procedural fairness varies predictably with these two senses, as do tendencies toward authoritarianism, egalitarianism and anarchism. We test our hypotheses in two studies, one conducted with the participation of 205 undergraduate students in the U.S.A. and the other in a Taiwanese company with the participation of 60 employees. We found consistent support for our hypotheses in both of these studies.

One of the important findings of research on procedural fairness is that people universally care about fair procedures (Lind and Tyler, 1988), meaning that they are universally troubled by the lack of fair procedures or by the violation of fair procedures in their organization or in their broader community, even if violations of fair procedures do not affect them directly. Furthermore, people universally desire fair procedures, and they tend to use similar criteria to judge what is a fair, at least on an abstract level (Morris and Leung, 2000). This universal concern with fair procedures seems to co-exist with a substantial variation in the particulars of fairness judgments (e.g., Lind, Tyler, and Huo, 1997; Steiner, 2001).

Current explanations for why people care about procedural fairness mostly focus on the question of why people care about whether they themselves are treated fairly and less on the question of why people care about whether others are treated fairly (see for an overview Colquitt, Conlon, Wesson, Porter, and Ng, 2001). One of these explanations, for example, suggests that people care about procedural fairness for self-interested reasons because they believe that fair processes ultimately lead to better outcomes for themselves (Greenberg, 2001). Another of these explanations suggests that people care about procedural fairness because they use it to judge their relationship with authorities and with the groups which empowered these authorities. According to this view, what people are actually interested in is the ability to maintain a positive identity of being a valued member of the groups (e.g., Lind and Tyler, 1988). The only explanation for concern for fairness to others as well as to oneself was proposed by Folger (1998) who suggested that people may care about fairness as a "moral principle." But even this explanation leaves open the question why concerns for fair procedures are universal moral concerns.

In this paper we address the question of why people care about procedural fairness by using a qualitatively different explanation than those that exist so far in the psychology literature. We propose that people's universal concern for procedural fairness is rooted in our human nature, indirectly evolved by natural selection. Evolutionary explanations are qualitatively different from existing explanations because they focus on the question of "How does a particular behavior, cognition, emotion and/or perception constitute a functional solution to an adaptive problem in our evolutionary past?" (Saad and Gill, 2000, p. 1006) (i.e., an "ultimate explanation") instead of trying to identify a mechanism of why people care about an issue in real time (i.e., a "proximate explanation").

There are various indicators that can be used to establish whether some behavioral or psychological pattern is an innate part of human nature. According to Brown (1991) these include: (1) an unusual ease in acquiring these; (2) emotionally motivated actions that run counter to consciously held ideals, (3) unusually intense preoccupation with certain topics, (4) traces of this behavior are present in other species who face similar adaptation problems, and (5) universality itself. When these indicators are present they point to the existence of a specific cognitive mechanism that is likely to have evolved to solve some recurrent adaptive problem that humans faced during their evolutionary history (Cosmides and Tooby, 1994; Kruzban and Leary, 2001). Human concern with procedural fairness seems to meet these criteria. Components of procedural fairness, for example, are understood with ease by children (Ambrose, 2002; Wilson, 1993). Procedural fairness is also something that people often feel passionately about (Ambrose, 2002; Folger, 1994) even (or especially) in conditions where there is an active attempt to suppress fairness considerations. We will argue below that some components of procedural fairness concerns can be seen in other species, and that these components seem to be universal. Given this match, it does appear that concern for procedural fairness may in fact be an adaptation.

Yet while concern for procedural fairness has features of a naturally selected adaptation, we believe that at least some crucial aspects of procedural fairness concerns can only arise in relatively modern and bureaucratic institutions and societies. How can something be adaptive in a Darwinian sense if the environment in which it is adaptive to is a modern one?

Consider, as an analogy, the ability to read. It is clear that this is highly adaptive in our modern world, but given the recency of writing, it is also clear that literacy is not directly a Darwinian adaptation. Indeed it is far more likely that humans developed writing systems to exploit pre-existing linguistic and visual skills.

Prior to the rise of modern bureaucracies, organizations unabashedly worked through favoritism and nepotism. In fact, an intention behind forming modern bureaucracies is to avoid favoritism and nepotism by enforcing a merit based, rule-governed structure that treats individuals identically, independent of their personal characteristics and group membership (Weber, 1947). Although human societies have long had provisions against the abuse of authority, the creation of "purposive" (Coleman, 1993) formal systems for interpersonal treatments on a large scale is modern (Pearce, Bigley, and Branyiczki, 1998). Indeed, only complex societies such as chiefdoms and

states developed formal procedures.

It is only since the Enlightenment at the earliest that notions of human rights, labor protection, and meritocracies have become wide spread among any substantial population. Thus, while rule systems are ancient, structures in which it became possible to discuss whether those systems are fair and whether they are applied fairly are modern.

Indeed, prior to the development of food production (and thus, stored wealth), human societies remained very small and without the kinds of divisions of labor that arose in agricultural societies. With limited division of labor among a small, close knit group of individuals the (typically egalitarian) norms that governed food and other resource distributions would have been distributive norms and not procedural ones (e.g., Diamond, 1997; Erdal and Whiten, 1996).

The puzzle

The puzzle is how does something in human psychology which has the appearances of an evolved trait develop when the circumstances under which it could be adaptive are too recent to influence human evolution? The solution is that the trait probably was selected for indirectly. Adopting the terminology of Gould and Lewontin (1979), we will distinguish between two mechanisms for such indirect selection. One mechanism is by "exaptation" where the trait evolved directly, but for some (possibly obscure) purpose other than its current function. The second mechanism produces a "spandrel", where the trait is the interaction of two or more other traits which evolved for their own reasons.

We argue that our Procedural Fairness Concern (PFC) is a spandrel, that is, it is a by-product of the interaction between two other traits. We will argue that PFCs are rooted in two (somewhat conflicting) senses. These are (1) a desire for social stability which is manifested in a respect for rules and for authority (Stability sense); and (2) a strong distaste towards an abuse of power (Anti-Abuse sense). We will reason below that each of these two senses has an evolutionary account which are at the very least plausible and in some places well supported. And finally we provide evidence that the interaction of those does lead to PFC.

In arguing and elaborating on the evolutionary origin of these two senses, we will draw on a variety of arguments and evidence from disparate domains of inquiry. While we can not directly test our core proposition that PFC is the

combination of these two evolved senses, we can indirectly test this through developing testable hypotheses that follow from our core proposition. We conducted two studies to test these and found that both studies supported our hypotheses. The first study was conducted with the participation of 205 undergraduate students in the U.S.A. and the second was conducted in a Taiwanese company with the participation of 60 employees.

1 Senses and Sensibilities

Before we go on to discuss how a sense for social stability and a sense opposing abuse of power interact, we need to elaborate on these senses and argue for their existence.

1.1 The stability sense

The first sense that we discuss is what we call "a desire for social stability" or "stability sense." Throughout history humans lived in societies that faced with the recurring problem of maintaining social stability. Without some form of social stability human societies would have approached Hobbes' notion of being in a state of "war of all against all" which would have been highly detrimental to the reproductive fitness of its members. The persistent nature of this problem and its impact on human survival and reproduction are conditions that likely to have lead to adaptations that allow humans to achieve a stable society. We claim the "stability sense" is such an adaptation, that allows humans to adopt both to dominance hierarchies or to egalitarian norms that are each ways to maintain social stability. We discuss the details below.

Dominance. In many social species, presumably including the common ancestor of all modern apes, stability is maintained by dominance hierarchies, where dominant individuals protect subordinates and serve a policing function, breaking up fights and maintaining order within the group (Krebs, 1998). Subordinate individuals defer to the dominant ones for protection as well as to avoid being harmed. Individuals who defer to those who can harm them and ingratiate themselves to those who can help them are more likely to succeed than those who don't in many circumstances. Deference should be particularly adaptive in social species with dominance hierarchies

because individuals are both dominant to those below them in dominance hierarchies and subordinate to those above them. All individuals should inherit capacities that mediate both dominant and submissive behaviors, and these capacities should be activated by the relative power of others (Krebs, 1998).

That humans, like other social animals, have innate capacities for both dominance and subordination behaviors is well supported by findings in developmental psychology and social psychology (e.g., Anderson and Willis, 1976; Hawley and Little, 1999; Rubin and Coplan, 1992; Segal, Peck, Vega-Lahr, and Field, 1987; Strayer, 1978). It has been shown, for example that adults who have never seen each other, before when organized into same-sex triads and dyads, will automatically form rank ordering at the first glance even before a word is spoken (Kalma, 1991).

The automatic, effortless, and ubiquitous nature of how humans (including very young children) form dominance orders when interacting with others indicates that humans are likely to have an innate disposition to deal with the adaptive problem of living in dominance hierarchies. Even if dominance hierarchies do not characterize the hunter gatherer period of human evolution, they are present among all apes, and human societies reverted back to dominance hierarchies with ease after the introduction of agriculture (Erdal and Whiten, 1996). This suggests that the capacity to deal with dominance hierarchies was present in the common ancestor of all apes and has survived in humans during the long period of egalitarianism of the hunter gatherer societies to this day.

Norms and norm enforcement. We need to note, however, that humans have a capacity not only to deal with dominance hierarchies but also to deal with norm-based egalitarian societies that are an alternative way of maintaining social stability. As we mentioned above, during much of human evolution, humans lived in egalitarian societies with powerful and solidly enforced norms against anyone trying to gain dominance (e.g, Erdal and Whiten, 1996). By "norms" we mean an expected standard of behavior which is enforced by ones peers. Typically, norms are enforced through a threat of ostracization. As suggested by Erdal and Whiten (1996), humans are likely to have developed psychological mechanisms to conform to social norms and to enforce them. Those who conform with societal norms were typically more successful because they enjoyed the help and protection of their groups (Baumeister and Leary, 1995). But conforming with the rules and norms

is only beneficial if most members of the group also conform. Humans not only just obey the norms but also enforce them. Thus most of us who are here today are descendants of individuals who conformed with the norms and the rules of their groups and also helped to enforce them. Several well known studies on the strong desire of humans to conform with others seem to support this argument both among adults (e.g., Asch, 1951; McGhee and Teevan, 1967) and among children (e.g., Berndt, 1996). Similarly, several studies show that even today, people experience strong negative emotions against those who do not follow the norms and are willing to suffer a high cost in order to punish those who violate the norms (e.g., Fehr and Fischbacher, 2004; Fehr and Gächter, 2002).

In sum, humans tend to have an innate inclination and capacity to achieve and maintain social stability. We refer to this in the rest of the paper as a sense or desire for social stability.

1.2   Dislike of abuse of power

Above we argued that humans have an inclination to accept authority and social rules. But an authority that does not meet its side of the social bargain could be indeed very detrimental to the individuals in that society. So we have a strong distaste for abuse of power. Wager, Fieldman, and Hussey (2003), for example, have shown that people in subordinate positions who experience unfairness from their superiors show prolonged anger and frustration. Furthermore, because people in subordinate positions often are not in the position to express their anger and irritation, their prolonged suppressed anger leads to persistently high blood pressure, hypertension, and a three or fourfold increase of the risk of developing heart disease. It is no surprise, therefore, that subordinates look for ways to vent their frustration against unfair superiors or organizational practices. They do this by engaging in vengeful behaviors, ranging from mere gossip to theft or sabotage (Ambrose, Seabright, and Schminke, 2002; Greenberg, 2002; Tripp, Bies, and Aquino, 2002).

There are many ways an authority can abuse his or her position. Boehm (1993), for example found after studying 48 nomadic societies around the world[1] that there are 47 broad types of behavior that were considered to be

---

[1]Boehm's (1993) sample contained 48 societies, including 12 from North America, 11 from Central and South America, 9 from Africa, 2 from the Mediterranean/Mid-east, 5

an abuse of power by an authority figure in these societies. These included 13 types of behavior that are a form of aggressiveness towards others, 14 types of behavior that are about various efforts to dominate others, ten types of behavior about partiality and unresponsiveness in a leadership role, five types of behavior about behaving in an ungenerous manner towards others and two types of behavior that are about meanness. It is no surprise that all of these societies had various mechanisms to control such abuse. Boehm (1993) distinguished eight types of sanctions that the surveyed societies tended to use to control the negative behavior of their leaders. These range from negative public opinion, to criticism, ridicule, disobedience, deposition, desertion, exile, and even death. The most striking example of how strongly people react to abusive behavior of dominant people is that assassination of abusive authorities is reported in 11 out of the surveyed 48 societies.

Dislike of abuse of power is present already in early childhood. A study that surveyed 1,057 children in Japan and in the U.S.A., for example found that one of the six main reasons for group exclusion of atypical peers is aggressiveness (Killen, Crystal, and Watanabe, 2002). Dislike of abuse of power has also been well observed among non-human primates. Chimpanzee and bonobo females, for example, have been reported to form enduring coalitions to keep females from being bullied by males (Boehm, 1999; Kano, 1992). Although in the wild, female gorillas who live in "harems" have not been observed to form coalitions to protect themselves from being bullied by the dominant male, traces of such behavior were observed among female gorillas in captivity (de Waal, 1982).

To avoid being seen as abusive, in many primitive societies authority figures are expected to refrain from claiming resources in excess. In fact, hunter gatherer societies often demand equal divisions of scarce resources (e.g., the result of hunting) and have rituals that serve to redistribute or even destroy excess wealth (Boehm, 1999; Itani, 1997).

In sum, cues from developmental psychology, animal behavior, and psychology converge on the possibility that humans have a natural disposition to dislike authorities that abuse their power.

---

from Asia, 2 from Oceania, 4 from New Guinea, and 3 from Australia. The societies he reviewed are nomadic, who either primarily gather and hunt, or primarily herd livestock or primarily garden or raise live stock.

	Anti-abuse	
	High	**Low**
High stability	SPFC	Authoritarianism
Low stability	Egalitarianism	Anarchism

Figure 1: Combinations of stability and anti-abuse senses

2   A complex interaction of the two

We argued so far that desire for social stability and dislike of an abusive authority are two distinct, plausibly evolved, human dispositions. Our core proposition is that the interaction of these two dispositions is at the root of why humans are universally concerned with procedural fairness. This proposition, however, is not directly testable. What we can test, instead, are hypotheses that follow from this proposition. In particular, we indirectly test the core proposition by testing the four hypotheses discussed below.

These hypotheses are based on the assumption that while both the desire of social stability and the dislike of authority are innate human universals, there is individual variation in these just as there is variation in many heritable human features. These variations are not expressions of different strategies but are rather "mutationally driven genetic noise" (Tooby and Cosmides, 1990), or just different expressions of the same adaptation due to different environmental (including societal) conditions. Just as there is a heritable variation in height, there is also a variation in antipathy to abuse and desire for social stability.

In what follows, we argue that individual variation in the *degree* of desire for social stability and of dislike of abuse of power lead to different concerns for fair procedures (PFC), as well as also to different values of authoritarianism, egalitarianism and anarchism. This relationship is described in Figure 1 and discussed below.

2.1   Concern for procedural fairness

We propose that people differ in their concern for procedural fairness depending on the degree of their desire for social stability and the degree to which they dislike authorities that abuse their power. We suggest that those individuals who are both high in their desire for social stability and high in

their dislike for abusive authorities will show a strong concern for procedural fairness, in a sense that they care very much about whether there are rules and procedures for fair conduct and whether authorities follow these rules and procedures in their actions.

Individuals with a high desire for social stability tend to defer to rules and to authority to maintain order. Also, individuals with a strong dislike of abuse of power tend to be watchful of the rules and conduct of authorities to make sure that rules are followed and authorities do not abuse their power. We suggest that when these senses occur in combination this leads to a strong concern for procedural fairness. Thus, we hypothesize that

Hypothesis 1 *Those individuals with a strong desire for social stability and with a strong opposition to abuse of power will have strong procedural fairness concerns.*

2.2 Authoritarianism

We propose that individuals who are high in their desire for social stability but low on anti-abuse of power tend to be high on authoritarianism. The term authoritarianism has been introduced by Adorno (1950) and was used to investigate the roots of various forms of social intolerance. We used the definition of Altemeyer (1988) to conceptualize authoritarianism as a value syndrome that compromises three distinct elements: (1) conventionalism, which is a high level of compliance with social norms; (2) an emphasis on hierarchy and submission to authority; and (3) "law and order" mentality which legitimizes anger and aggression against those who deviate from the social norms. Why would people want to enforce norms that restrict how people – including themselves – behave? As Nunn, Crockett, and Williams (1978, p. 6) stated "every society inevitably confronts the problem of how much individual freedom is possible and how much social control is needed." Individuals with a high desire for social stability and a low opposition to abuse by authorities are inclined to trade individual autonomy and protection from authorities for social stability and order which is at the heart of authoritarianism (Feldman, 2003). Authoritarians appear to feel that the choice is between authoritarianism and instability. We hypothesize that

Hypothesis 2 *Those individuals with a with a strong desire for social stability and a weak opposition to abuse of power will have authoritarian characteristics.*

2.3   Egalitarianism

We propose that some individuals (or societies) dislike even the possibility of dominant individuals abusing their positions to such a degree that they favor a complete elimination of hierarchies. These individuals and societies hold egalitarian values. Egalitarianism here is used in a way suggested by Lee (1979, p. 457) as "not simply the absence of a headman and other authority figures, but a positive insistence on the essential equality of all people and a refusal to bow to the authority of others ..." Thus at the heart of egalitarianism lies a refusal to obey an authority or system (low stability sense in our term) and a strong dislike of individuals who try to achieve dominance. In a modern, large scale, and relatively egalitarian society, a sense for egalitarianism may take the form of what some have called "radical egalitarianism" (Wildavsky, 1991). In the extreme case, radical egalitarianism entails the presumption that anything – no matter how benign – done by or in the interest of the powerful is evil; and anything – no matter how horrific – done by or in the interest of the weak and powerless is justified. Few people would assent to subscribing to such a doctrine, but it is also clear that some recent political discourse can only be explained if we acknowledge that many of us do share at least milder forms of that sentiment (Ellis, 1998). We propose that

Hypothesis 3 *Those individuals with a weak desire for social stability and a strong opposition to abuse of power will have egalitarian characteristics.*

2.4   Anarchism

While authoritarian individuals and societies are willing to trade individual freedom for social stability, those with anarchistic values do the opposite. Anarchists emphasize individual freedom and autonomy above granting authority to others or constraining individual freedom via rules and procedures (Fox, 1993). Anarchists believe that order that is achieved by some institution or by rules and formal procedures merely privilege a certain way of being while negating the prospect of alternative ways of being (Williams and Arrigo, 2001). Thus any form of stability that is imposed on people by some authority or by rules or regulations are opposed. Thus, we expect people with anarchistic orientations to have a weak desire for social stability.

The paradox is that, while anarchists oppose any form of rules and authorities, they do not oppose abuse of power in any strong sense. Strong feeling

against abuse of power requires that one has a standard of what constitute of "good" authority, and one feels strongly when this standard is violated. Anarchists, however, deny the very existence of such a standard, given that in their belief system no form of authority is good. Thus we hypothesize, that

Hypothesis 4 *Those individuals with a weak desire for social stability and a weak opposition to abuse of power will have anarchistic characteristics.*

The four hypotheses follow from our core proposition and some reasonable assumptions and observations about variation along our two dimensions. Thus, we will consider support for H1–H4 to provide indirect support for our core proposition. An empirical confirmation of our hypotheses allow us to step toward resolving the puzzle of how something like concern for procedural fairness could be part of human nature despite the fact that it is largely a question for modern societies.

3   The studies

We conducted two studies to test our hypotheses.

The first study was conducted with the participation of 205 undergraduate students from a major Californian university in the U.S.A. Of the participants 44.1% were male and 55.9% were female. The average age of the participants was $\bar{x} = 21.5$ years ($\sigma = 2.08$). All students worked towards an undergraduate degree in business and thus were assumed to have similar education level.

The second study was conducted with the participation of 60 employees from a Taiwanese company that packages and sells gift items, such as wooden pens, collectible figurines and glass items. We used participants from a country other than the U.S.A. to demonstrate that our theory is not specific to one culture. The second study consisted of 45% males and 55% females. The average age of the participants was $\bar{x} = 32.12$ years ($\sigma = 10.37$) and the average education level was high school.

3.1   Measures

Desire for social stability. Desire for social stability was measured by the seven item dutifulness scale of the International Personality Item Pool

(IPIP) (IPIP, 2001; Mervielde, Deary, Fruyt, and Ostendorf, 1999). The scale included items, like "I believe that laws should be strictly enforced," and "I always try to follow the rules". The validity and reliability of the IPIP scales has been demonstrated by Briggs, Cheek, and Donahue (In Press). The reliability of this scale measured by Cronbach α in Study 1 is .733 and in Study 2 is .712.

Attitude towards abusing power. Attitude towards abusing power was measured by Rigby and Slee's (1991) four item scale. Example items are (1) "I like it when someone stands up for people who are being mistreated by powerful people," (2) "It's a good thing to help those who cannot defend themselves against the bullying of some powerful people." The reliability of this scale measured by Cronbach α in Study 1 is .84 and in Study 2 is .75.

Egalitarianism. Egalitarianism was measured by four items adopted from Bales and Couch (1969). Example items are: "Everyone should have an equal chance and an equal say," and "There should be equality for everyone because we are all human beings." The Cronbach α in Study 1 is .71 and is .70 in Study 2.

Authoritarianism. Authoritarianism has been measured by four items from the Christie, Havel, and Seidenberg (1958) F-scale, including: (1) "What youth needs most is strict discipline, rugged determination, and the will to work and to fight for family and for the country," (2) "Most of our social problems would be solved if we could somehow get rid of the immoral, crooked, and feeble-minded people," (3) "People ought to pay attention to new ideas even if they seem to go against the Taiwanese/American way of life" (reverse scored); (4) "One of the most important things children should learn is when disobey authorities" (reverse scored). The Cronbach α in Study 1 is .76 and in Study 2 it's .72.

Anarchism. We were unable to find a valid scale to measure anarchism. To solve this problem we measured anarchism by taking descriptive phrases on anarchism from the writings of Benjamin R. (Tucker, 1926). The phrases that were used to measure anarchism included: (1) "All the affairs of people should be managed by individuals or by voluntary associations and not by the government," (2) Collection of taxes is an act of aggression by the state and a violation of equal liberty," (3) "People should mind their own business and should not try to impose any moral codes on other individuals," (4) "Drunks, drug addicts, gamblers, vagrants, and prostitutes should be allowed to live

	1	2	3	4	5	6	7	8
1 Age	1.00							
2 Sex	.01	1.00						
3 Stability	.01	.22**	1.00					
4 Anti-abuse	.10	.12	.03	1.00				
5 Fair concern	.13†	.04	.19**	.46**	1.00			
6 Equality	−.01	.25**	.02	.21**	.19**	1.00		
7 Authoritarian	.09	.03	.10	−.01	.09	.13†	1.00	
8 Anarchism	−.07	−.01	−.16*	−.21**	−.04	−.00	−.04	1.00

†$p < .1$; *$p < .05$; **$p < .001$

Table 1: Cross-Correlations in Study 1

their lives without the interference of others until they seek assistance in changing their lives." The Cronbach α in Study 1 is .72 and is .70 in Study 2.

Concern and perception of fair procedures. We used a modified version of the four item measure by Farh, Earley, and Lin (1997) to elicit concern for procedural fairness. The four items include statements, like "[In my company] managers at all levels participate in pay and performance appraisal decisions." To measure concern for procedural fairness we framed the items negatively and modified them with the following phrase "It troubles me if a company...". For example, "It troubles me if in a company managers at all levels do not participate in pay and performance appraisal decisions." The Cronbach α of this scale for Study 1 is .85 and in and for Study 2 is .72.

3.2   Control variables

Individual characteristics such as age and sex (1=male, 2=female) were used as control variables in the first study. In the second study education level and the level of managerial position within the company were also added as control variables. These were coded as dummy variables.

4   Analysis

Cross-correlation tables for studies 1 and 2 are listed in tables Tables 1 and 2.

	1	2	3	4	5	6	7	8	9	10
1 Age	1.00									
2 Sex	−.13	1.00								
3 Education	.21	−.10	1.00							
4 Position	.40**	−.10	.45**	1.00						
5 Stability	−.19	.02	−.07	−.36*	1.00					
6 Anti-abuse	.12	.15	.14	.11	.31*	1.00				
7 Fair concern	.01	.15	.10	.26*	.22†	.26*	1.00			
8 Equality	−.05	.20	.29*	−.07	−.09	.38**	.27*	1.00		
9 Authoritarian	.08	.08	.10	.19	.39**	−.19	.08	.26*	1.00	
10 Anarchism	−.04	−.07	.01	−.12	−.13	−.00	−.06	.07	−.19	1.00

†$p < .1$; *$p < .05$; **$p < .001$

Table 2: Cross-Correlations in Study 2

4.1 Concern for fairness, stability desire and disliking abuse of authority

Table 3 presents the results of four hierarchical regression analyzes based on study 1. Table 4 presents the results of four hierarchical regression analyzes that tested the same hypotheses based on study 2.

In both studies the control variables were entered in the first step, followed by entering the main variables in step 2. These included the measure of respect for rules/authority (desire for stability) and a measure for disliking abuse of power. Finally, in step 3 we tested for the interaction effect between various levels of the two main variables. Step 3 in Tables 3 and 4 show that all hypotheses were supported by the results of both studies, although in study 2, hypotheses H1, H3, and H4 were only marginally significant.

5 Conclusion

In this paper we proposed and indirectly tested an explanation for why humans are universally concerned with fair procedures and with the violation of these procedures. Our explanation differs in two important ways from existing explanations for human procedural fairness concerns: (1) We focus on the question of why the modern concept of procedural fairness concerns appears to be a human adaptation (an "ultimate" explanation) as opposed to trying to identify a mechanism for why people care about procedural fairness in real time (a "proximate" explanation); (2) and we seek an explanation for why humans care about fair procedures in general and not just merely why people care about their own fair treatment. An ultimate explanation is quite different from a proximate explanation in the sense that proximate explanations tell us what is meaningful for humans given the brain they have, while ultimate explanations tell us why humans have that sort of brain. So, while existing explanations for procedural fairness tell us that humans are concerned with procedural fairness for rational (self-interested) or emotional (relational, moral) reasons, our ultimate explanation tells us why humans have a brain that makes us feel that it is rational for us or emotionally important for us to care about procedural fairness. As many (e.g., Mayr, 1988; Pinker, 2002; Tinbergen, 1989) have stated repeatedly, the ultimate and proximate explanations are not in conflict with each other, but rather they supplement each other, by answering the same question from a different

At step:	PFC			Authoritarianism			Egalitarianism			Anarchism		
	1	2	3	1	2	3	1	2	3	1	2	3
Step 1												
Age	.04	.06	.07	.10	.10	.09	−.00	−.02	−.02	−.06	−.04	−.03
Sex	.16*	.19**	.20**	.02	.02	.02	.25***	.22**	.22**	−.01	−.07	−.07
Step 2												
Stability		.15*	.21**		.04	.08		−.05	−.12		−.21**	−.30**
Anti-abuse		.43***	.45***		−.05	−.10		.26***	.32***		−.16*	−.25*
Step 3												
Interaction[a]			.18*			.28**			.14†			.20**
ΔR^2		.22	.02		.00	.05		.07	.01		.07	.02
ΔF		17.95***	2.25†		.29	8.46**		6.99***	2.06†		6.94***	4.75*
Overall R^2	.03	.25	.27	.01	.01	.06	.06	.13	.14	.00	.07	.09
F	.26†	12.08***	9.93***	.58	.46	1.81†	6.20**	6.80***	5.90***	.32	3.64**	3.88**
ν	2	4	5	2	4	5	2	4	5	2	4	5
residual	203	201	200	203	201	200	203	201	200	203	201	200

[a]The "Interaction" is the interaction effect predicted for the particular dependent variable. That is, when the DV is "PFC" the interaction is between "high stability" and "high anti-abuse"; when the DV is "Egalitarianism" the interaction is between "low stability" and "high anti-abuse"

†$p > .10$; *$p > .05$; **$p > .01$; ***$p > .001$.

Table 3: Combined Regression results for Study 1

At step:	PFC 1	PFC 2	PFC 3	Authoritarianism 1	Authoritarianism 2	Authoritarianism 3	Egalitarianism 1	Egalitarianism 2	Egalitarianism 3	Anarchism 1	Anarchism 2	Anarchism 3
Step 1												
Age	.05	.06	.15	.19	.23	.17	−.02	−.00	−.01	−.09	−.09	−.05
Sex	.13	.07	.02	−.07	−.03	−.16	.13	.17	.14	−.09	−.07	−.00
Education	.02	.07	.13	−.20	−.02	−.11	.39*	.24	.16	.19	.13	.07
Position	.14	.07	.01	−.40*	−.11	−.06	−.23	−.11	−.11	−.13	−.08	−.01
Step 2												
Stability		.18	.30†		.43*	.53**		−.25	−.39*		−.12	−.36
Anti-abuse		.18	.15		−.12	−.27		.36†	.50**		−.13	−.02
Step 3												
Interaction[a]			.35†			.42*			.31†			.35†
ΔR^2		.06	.08		.18	.07		.14	.07		.02	.07
ΔF		1.67	2.05		12.65***	5.96*		4.89†	2.61†		.62	2.01
Overall R^2	.05	.11	.19	.12	.30	.37	.14	.28	.35	.04	.06	.13
F	.50	1.02	1.28	1.82	5.96***	6.45***	2.37†	3.44**	3.39**	.60	.60	.97
ν	4	6	7	4	6	7	4	6	7	4	6	7
residual	55	53	52	55	53	52	55	53	52	55	53	52

[a]The "Interaction" is the interaction effect predicted for the particular dependent variable. That is, when the DV is "PFC" the interaction is between "high stability" and "high anti-abuse"; when the DV is "Egalitarianism" the interaction is between "low stability" and "high anti-abuse"

†$p > .10$; *$p > .05$; **$p > .01$; ***$p > .001$.

Table 4: Combined Regression results for Study 2

perspective. The ultimate explanation for procedural fairness for example is able to shead a new light to the question of why humans are universally concerned with fair procedures, which is fully consistent with variation in the degree of fairness concern.

That humans may vary in their concern for procedural fairness has received little attention in organizational research, despite the probability that differential concern for procedural fairness is highly relevant to behaviors in organizations. It is well established in organizational research that perceptions of procedural fairness affect job satisfaction, organizational commitment, and turnover in organizations (Colquitt et al., 2001). Most attention has been devoted to the positive relationship between perceived procedural fairness and organizational citizenship behavior (OCB) (e.g., Farh et al., 1997; Moorman, 1991; Moorman, Blakely, and Niehoff, 1998; Tepper and Taylor, 2003), a discretionary, pro-social behavior that is "not directly or explicitly recognized by the formal reward system" (Organ, 1988, p. 4). If individuals differ in the degree to which they are concerned with procedural fairness, they should also differ in the degree to which they value perceived procedural fairness and thus feel obliged to engage in OCB. Thus, variation in individual concerns for procedural fairness is likely to affect the effectiveness of fair procedures in inducing organizational citizenship behavior,[2] which is relevant to our understanding of why fair procedures are not always effective in inducing organizational citizenship behavior (Farh et al., 1997).

Overall, we hope that this paper has shown that the evolutionary framework can be useful in developing interesting and testable theories that can inform organizational theory beyond what is already known. Alleged failure to do so is often used as a criticism of evolutionary psychology (Kurzban, 2002; Markóczy and Goldberg, 1997).

5.1 Limitations

A limitation of this study is that we were only able to provide an indirect test of the argument that concern for procedural fairness resulted from the interaction of two evolved senses: desire for social stability and dislike of abuse of power. Furthermore, to do this test, we needed to exapt scales which were originally designed for different purposes, and we feel that this

---

[2]In fact, we tested this relationship in a yet to be written up study. We found, as expected, that PFC does positively moderate the relationship between perceived procedural fairness and actual OCB.

certainly will have added noise to our results. But even if the scales we used are not perfect measures of what we seek to measure, we do not see a way in which that imperfection could generate a false positive. So we remain confident that our results will be reconfirmed by future work.

We did not provide much more than plausibility arguments for the ideas that desire for social stability and dislike of abuse of power are senses evolved by natural selection. What we did do is argue that those two senses clearly exist, and we showed that they vary. Recall that our goal was to resolve the puzzle of how PFC could be part of human nature while the conditions for it being adaptive are merely thousands of years old. By demonstrating (as we believe we have done) that PFC is the interaction between other extant (and plausibly naturally selected) senses, we have resolved the puzzle that we have set out to resolve.

In addition, we need to note that our discussion of the desire for social stability and dislike of abuse of power is based on theories and findings in developmental psychology, cognitive psychology, anthropology, neurology, and ethology, that are not universally accepted within these fields and are still actively debated. Unfortunately, space limitations do not allow us to review these controversies. We feel, however, that we have drawn upon solid and well-respected streams within those fields, and what is often the main stream. Readers may confirm this for themselves by trying to gauge the state of those fields independently.

References

ADORNO, THEODOR W. (1950). *The Authoritarian personality.* Harper: New York. Cited on: 9

ALTEMEYER, BOB (1988). *Enemies of freedom: Understanding right-wing authoritarianism.* Jossey-Bass: San Francisco, CA. Cited on: 9

AMBROSE, MAUREEN L. (2002). Contemporary justice research: A new look at familiar questions. *Organizational Behavior and Human Decision Processes*, 89: 803–812. Cited on: 2

AMBROSE, MAUREEN L., MARK A. SEABRIGHT, and MARSHALL SCHMINKE (2002). Sabotage in the workplace: The role of organizational injustice. *Organizational Behavior and Human Decision Processes*, 91(2): 947–965. Cited on: 6

ANDERSON, FRANCES J. and FRANK N. WILLIS (1976). Glancing at others in preschool children in relation to dominance. *Psychological Record*, 26(4): 467–472. Cited on: 5

ASCH, SOLOMON E. (1951). Effects of group pressure upon the modification and distortion of judgement. In *Groups, leadership, and men* (ed. H. Guetzkow). Pittsburgh, PA: Carnegie. Cited on: 6

BALES, ROBERT F. and ARTHUR S. COUCH (1969). A value profile: A factor analytic study of value statements. *Sociological Inquiry*, 39: 3–17. Cited on: 12

BAUMEISTER, ROY F. and MARK R. LEARY (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3): 497–529. Cited on: 5

BERNDT, THOMAS J. (1996). Friends' influence on children's adjustment to school. In *Relationships as developmental contexts: The Minnesota symposia on child psychology* (eds. W. Andrew Collins and Brett Laursen), pp. 85–107. Mahwah, NJ: Lawrence Erlbaum Associates. Cited on: 6

BOEHM, CHRISTOPHER (1993). Egalitarian behavior and reverse dominance hierarchy. *Current Anthropology*, 34(3): 227–254. Cited on: 6, 7

BOEHM, CHRISTOPHER (1999). *Hierarchy in the forest: The evolution of egalitarian behavior*. Cambridge, Mass.: Harvard University Press. Cited on: 7

BRIGGS, S. R., J. M. CHEEK, and E. M. DONAHUE (eds.) (In Press). *Handbook of Adult Personality Inventories*. New York: Plenum. Cited on: 12

BROWN, DONALD E. (1991). *Human Universals*. New York: McGraw Hill. Cited on: 2

CHRISTIE, R., JOAN HAVEL, and B. SEIDENBERG (1958). Is the F scale irreversible? *Journal of Abnormal and Social Psychology*, 56: 143–159. Cited on: 12

COLEMAN, JAMES (1993). The rational reconstruction of society. *American Sociological Review*, 58: 1–15. Cited on: 2

COLQUITT, JASON A., DONALD E. CONLON, MICHAEL J. WESSON, CHRISTOPHER O. L. H. PORTER, and K. YEE NG (2001). Justice at the millenium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86(3): 425–445. Cited on: 1, 18

COSMIDES, LEDA and JOHN TOOBY (1994). Origins of domain specificity: The evolution of functional organization. In *Mapping the mind: Domain specifity in cognition and culture* (eds. L. Hirschfeld and S. Gelman), pp. 85–116. New York: Cambridge University Press. Cited on: 2

DIAMOND, JARED (1997). *Guns, Germs and Steel: The fates of human societies*. New York: W. W. Norton & Co. Cited on: 3

ELLIS, RICHARD J. (1998). *The Dark Side of the Left: Illiberal egalitarianism in America*. Lawrence Kansas: University of Kansas Press. Cited on: 10

ERDAL, DAVID and ANDREW WHITEN (1996). Egalitarianism and Machivellian intelligence in human evolution. In *Modelling the early human mind* (eds. Paul Mellars and Kathleen Gibson), pp. 139–150. Oxford: Oxbow Books. Cited on: 3, 5

FARH, JIING-LIH, P. CHRISTOPHER EARLEY, and SHU-CHI LIN (1997). Impetus for action: A cultural analysis of justice and organizational citizenship behavior in Chinese society. *Administrative Science Quarterly*, 42(3): 421–444. Cited on: 13, 18

FEHR, ERNST and URS FISCHBACHER (2004). Third-party punishment and social norms. *Evolution and Human Behavior*, 25(2): 63–87. Cited on: 6

FEHR, ERNST and SIMON GÄCHTER (2002). Altruistic punishment in humans. *Nature*, 415: 137–140. Cited on: 6

FELDMAN, STANLEY (2003). Enforcing social conformity: The theory of authoritarianism. *Political psychology*, 24(1): 41–74. Cited on: 9

FOLGER, ROBERT (1994). Workplace justice and employees worth. *Social justice research*, 7: 225–241. Cited on: 2

FOLGER, ROBERT (1998). Fairness as a moral virtue. In *Managerial ethics: Moral management of people and processes* (ed. Marshall Schminke), pp. 13–34. Mahwah, NJ: Lawrence Erlbaum. Cited on: 1

FOX, D. R. (1993). The autonomy-community balance and the equity-law distinction: Anarchy's task for psychological jurisprudence. *Behavioral Sciences and the Law*, 11: 97–109. Cited on: 10

GOULD, STEPHEN J. and RICHARD C. LEWONTIN (1979). The spandrels of San Marco and the Panglossian paradigm: A critique of the adaptationist programme. *Proceedings of the Royal Society of London B*, 205: 581–596. Cited on: 3

GREENBERG, JERALD (2001). The seven loose can(n)ons of organizational justice. In *Advances in organizational behavior* (ed. J. Greenberg), pp. 245–271. Stanford, CA: Stanford University Press. Cited on: 1

GREENBERG, JERALD (2002). Who stole the money, and when? Individual and situational determinants of employee theft. *Organizational Behavior and Human Decision Processes*, 91(2): 985–1003. Cited on: 6

HAWLEY, PATRICIA H. and TODD D. LITTLE (1999). On winning some and losing some: A social relations approach to social dominance in toddlers. *Merrill-Palmer Quarterly*, 45(2): 185–214. Cited on: 5

IPIP (2001). *A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences.* International Personality Item Pool. http://ipip.ori.org/. Cited on: 12

ITANI, JUNICHIRO (1997). The origin of human equality. In *Social Fabrics of the Mind* (ed. Michael R. A. Chance), pp. 676–711. London, UK: Lawrence Erlbaum. Cited on: 7

KALMA, AKKO (1991). Hierarchisation and dominance assessment at first glance. *European Journal of Social Psychology*, 21(2): 165–181. Cited on: 5

KANO, TAKAYOSHI (1992). *The Last Ape: Pygmy Chimpanzee Behavior and Ecology.* Stanford, CA: Stanford University Press. Cited on: 7

KILLEN, MELANIE, DAVID S. CRYSTAL, and HIROZUMI WATANABE (2002). Japanese and American children's evaluations of peer exclusion, tolerance of differences, and prescriptions for conformity. *Child Development*, 73(6): 1788–1802. Cited on: 7

KREBS, DENNIS L. (1998). The evolution of moral behaviors. In *Handbook of evolutionary psychology* (eds. Charles Crawford and Dennis L. Krebs), pp. 337–368. Mahwah, N.J.: Lawrence Erlbaum. Cited on: 4, 5

KRUZBAN, ROBERT and MARK R. LEARY (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, 127(2): 187–208. Cited on: 2

KURZBAN, ROBERT (2002). Alas poor evolutionary psychology: Unfairly accused, unjustly condemned. *The Human Nature Review*, 2: 99–109. Cited on: 18

LEE, RICHARD BORSHAY (1979). *The !Kung San: Men, women, and work in a foraging society.* New York: Cambridge University Press. Cited on: 10

LIND, ALLAN E., TOM R. TYLER, and YUEN J. HUO (1997). Procedural context and culture: Variation in the antecedents of procedural justice judgments. *Journal of Personality and Social Psychology*, 73(4): 767–780. Cited on: 1

LIND, E. ALLAN and TOM R. TYLER (1988). *The social psychology of procedural justice*. New York: Plenum Press. Cited on: 1

MARKÓCZY, LÍVIA and JEFF GOLDBERG (1997). The virtue of cooperation: A review of Ridley's *Origins of Virtue. Managerial and Decision Economics*, 18: 399–411. Cited on: 18

MAYR, ERNST (ed.) (1988). *Toward a new philosophy of biology: Observations of an evolutionist*. Cambridge, Mass: Belknap Press of Harvard University Press. Cited on: 15

MCGHEE, PAUL E. and RICHARD C. TEEVAN (1967). Conformity behavior and need for affiliation. *Journal of Social Psychology*, 72(1): 117–121. Cited on: 6

MERVIELDE, I., I. DEARY, F. DE FRUYT, and F. OSTENDORF (eds.) (1999). *Personality Psychology in Europe*, volume 7. The Netherlands: Tilburg University Press. Cited on: 12

MOORMAN, ROBERT H. (1991). Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? *Journal of Applied Psychology*, 76(6): 845–855. Cited on: 18

MOORMAN, ROBERT H., GERALD L. BLAKELY, and BRIAN P. NIEHOFF (1998). Does perceived organizational support mediate the relationship between procedural justice and organizational citizenship behavior? *Academy of Management Journal*, 41(3): 351–358. Cited on: 18

MORRIS, MICHAEL W. and KWOK LEUNG (2000). Justice for all? Progress in research on cultural variation in the psychology of distributive and procedural justice. *Applied Psychology: An International Review*, 49(1): 100–132. Cited on: 1

NUNN, CLYDE Z., HARRY J. CROCKETT, and J. ALLEN WILLIAMS (1978). *Tolerance for nonconformity*. Jossey-Bass: San Francisco. Cited on: 9

ORGAN, DENNIS W. (1988). *Organizational Citizenship Behavior: The Good Soldier Syndrome*. Lexington Books: Lexington M.A. Cited on: 18

PEARCE, JONE L., GREGORY A. BIGLEY, and IMRE BRANYICZKI (1998). Procedural justice as modernism: Placing industrial/organizational psychology in context. *Applied Psychology: An International Review*, 47(3): 371–396. Cited on: 2

PINKER, STEVEN (2002). *The Blank Slate: The modern denial of human nature.* New York: Viking. Cited on: 15

RIGBY, KEN and PHILLIP T. SLEE (1991). Bullying among Australian school children: Reported behavior and attitudes toward victims. *Journal of Social Psychology*, 131(5): 615–627. Cited on: 12

RUBIN, KENNETH H. and ROBERT J. COPLAN (1992). Peer relationships in childhood. In *Developmental psychology: An advanced textbook* (eds. Marc H. Bornstein and Michael E. Lamb). Hillsdale, NJ: Lawrence Erlbaum Associates. Cited on: 5

SAAD, GAD and TRIPAT GILL (2000). Applications of evolutionary psychology in marketing. *Psychology and Marketing*, 17: 1005–1034. Cited on: 1

SEGAL, MARILYN, JOHANNE PECK, NITZA VEGA-LAHR, and TIFFANY M. FIELD (1987). A medieval kingdom: Leader-follower styles of preschool play. *Journal of Applied Developmental Psychology*, 8(1): 79–95. Cited on: 5

STEINER, DIRK D. (2001). Cultural influences on perceptions of distributive and procedural fairness. In *Theoretical and Cultural perspectives on organizational justice* (eds. Stephen Gilliland, Dirk Steiner, and Daniel Skarlicki), pp. 111–137. Greenwich, CT: Information age publishing. Cited on: 1

STRAYER, JANET (1978). Social aggression and power relations among preschool children. *Aggressive Behavior*, 4(2): 173–182. Cited on: 5

TEPPER, BENNET J. and EDWARD C. TAYLOR (2003). Relationships among supervisors' and subordinates' procedural justice perceptions and organizational citizenship behaviors. *Academy of Management Journal*, 46(1): 97–105. Cited on: 18

TINBERGEN, NIKO (ed.) (1989). *The study of instinct.* Oxford: Clarendon Press. Cited on: 15

TOOBY, JOHN and LEDA COSMIDES (1990). On the universality of human nature and the uniqueness of the individual: The role of the genetics adapation. *Journal of Personality*, 58(1): 17–67. Cited on: 8

TRIPP, THOMAS M., ROBERT J. BIES, and KARL AQUINO (2002). Poetic justice or petty jealousy? The aesthetics of revenge. *Organizational Behavior and Human Decision Processes*, 91(2): 966–984. Cited on: 6

TUCKER, BENJAMIN R. (1926). *Individual Liberty: Selections From the Writings of Benjamin R. Tucker*. New York: Vanguard Press. Cited on: 12

DE WAAL, FRANZ (1982). *Chimpanzee Politics: Power and Sex among Apes*. New York: Harper and Row. Cited on: 7

WAGER, N., G. FIELDMAN, and T. HUSSEY (2003). The effect on ambulatory blood pressure of working under favourably and unfavourably perceived supervisors. *Occupational Environmental Medicine*, 60: 468–474. Cited on: 6

WEBER, MAX (1947). *The theory of social and economic organization*. Thousand Oaks, CA: Sage. Cited on: 2

WILDAVSKY, AARON B. (1991). *The rise of radical egalitarianism*. Washington, D.C.: American University Press. Cited on: 10

WILLIAMS, CHRISTOPHER R. and BRUCE A. ARRIGO (2001). Anarchaos and order: On the emergence of social justice. *Theoretical Criminology*, 5(2): 223–252. Cited on: 10

WILSON, JAMES Q. (1993). *The Moral Sense*. New York: The Free Press. Cited on: 2