The Evolution of Prestige

Freely-conferred status as a mechanism for enhancing the benefits of cultural transmission

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Abstract: The paper advances an 'information-goods' theory for the evolution of prestige hierarchies, prestige-related ethologies, and prestige-biased cultural transmission. Using the theory, we generate a set of empirically-testable predictions, and compile evidence from psychology, ethology, anthropology, and sociology in order to evaluate them. The information-goods theory explains prestige as an emergent product of psychological adaptations that evolved to improve the quality of information acquired via cultural transmission (imitation and emulation). Natural selection favored imitators who could evaluate potential models and preferred the most successful among them. In order to improve the fidelity and comprehensiveness of such ranked copying, imitators further evolved biases to ingratiate themselves sycophantically to their chosen role-models so as to gain close proximity to, and prolonged interaction with, these models. This process resulted in distributions of deference which new entrants into the system could use to make initial guesses about who were the best role-models and start copying immediately, resulting in a preference for role-models who seem generally 'popular'. We argue that most phenomena associated with prestige processes can more plausibly be encompassed by this simple theory than by others. In particular, this theory explains the characteristic ethologies of low- and high-status individuals in prestige hierarchies. The focus on ethology and other processes also justifies a sharp distinction between *dominance* (status by force or force threat), and *prestige* (status through achievement), which we defend.

... Eminence without merit earns deference without esteem.–Sébastien-Roch Nicolas de Chamfort (1741–94).

... it is evident that the whole maintenance of a social order depends upon the appropriate kind and degree of respect being shown towards certain persons, things and ideas or symbols.—Radcliffe-Brown (1952).

1. INTRODUCTION

Social scientists have long sought to explain the asymmetries of human social interaction and exchange. This paper examines interpersonal, within-group asymmetries related to patterns of deference and privilege, which, depending on the author and field, are inconsistently classified and receive the name of 'status', 'prestige', or 'dominance' differences. Weber (1947, 1958), for example, sees status hierarchies as a problem of 'authority', which he divides into three categories: legal, traditional, and charismatic authority. In another tripartite sociological division, Goode (1978) separates status into prestige, dominance, and wealth. Meanwhile, archaeologists divide social rankings into 'ascribed' (e.g. chiefdoms and states) and 'achieved' status (e.g. 'big man' societies) and use the material remains of culture to classify societies according to their degree of ascribed vs. achieved (Renfrew & Bahn 1996: 187-188).

Other scholars treat all social asymmetries as a single dimension (whether they call it 'status', 'power', or 'prestige'), without making any finer classificatory distinctions (e.g. Shils 1970:424-427; Leach 1977:10; Ryckman et al. 1972). Sociologists exploring "occupational prestige" theorize about why occupations vary in status, without precisely identifying what they mean by 'prestige', and often conflating different forms of status such as 'power' and 'prestige' (e.g. Treiman 1977:21-22). Evolutionary psychologists tend to see different types of human status as homologous to the dominance hierarchies

found in non-humans (Barkow 1975, 1989; Hill 1984a, 1984b; Ellis 1995), but fail to explain why some forms of human status are absent in non-humans. Other scholars likewise use the word 'dominance' when the status dimension in question has absolutely nothing to do with force or force threat, and appear to view dominance in non-human primates as a homologous phenomenon to all human status processes (e.g. Gibb 1954:220-21; Bernhardt 1997:45).

Given such variety, we must strive here for conceptual clarity. Individuals have status only because others behave deferentially towards them—that is, all status rankings are hierarchies of deference, so in order to explain status we must discover what causes individuals to defer. If no one behaves deferentially towards an individual, that person is not considered high status, regardless of their physical power, skill, knowledge, or economic standing. There are many asymmetrical social relationships: priest/parishioner, star/fan, father-in-law/son-in-law, professor/student, boss/employee, 'bigman'/client, bully/wimp...etc. We propose that a large proportion of these relationships can be parsed, according to the patterns of deference involved, into two kinds of status: *dominance* and *prestige*. Accordingly, we refer to the psychologies that underlie each respectively as *dominance* and *prestige* psychologies; to their associated behavioral patterns as *dominance* and *prestige* ethologies; and to the resulting social asymmetries as *dominance* and *prestige* hierarchies. 'Dominance' stands for imposed status, and 'prestige' for freely-conferred status.[1]

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[1] Our bipartite division into prestige and dominance corresponds roughly to what Gibb (1954) has called *leadership* (prestige derived leadership) and *headship* (dominance derived leadership). The difference between Gibb's categories and ours lies in the fact that one can enjoy high status without for that becoming

a) What is status?

Status involves social hierarchy but, more precisely, it can be viewed as either a hierarchy of rewards or as a hierarchy of displays—or both simultaneously. Status as *rewards* implies a hierarchy of privilege—i.e. those with more status have greater access to desirable things, and this access is on average not openly resisted by those with lesser status. The qualification 'on average' is important. If those who obtained more desirable things had to fight for them every single time, we wouldn't think there was a status hierarchy; a hierarchy of frequent winners and losers, perhaps (a tabulation of results at most), but not a *status* hierarchy. Only when individuals are getting *away* with certain desirable things—and not merely getting them—do we have status, properly speaking. Thus, we require a relatively stable acquiescence (begrudging or not) from the 'have-nots' towards the fact that the 'haves' have and will continue to get. Take, for example, primate dominance hierarchies. Certainly some individuals win some fights and others lose. But after a few fights, the frequent losers learn not to challenge the winners and very soon the latter get their way without fighting every time. Should individuals never learn their place—with fights breaking out every time regardless of past history—there would be no status to speak of (though there might still be differential access to desirable things).

> In itself, consistency in the outcome of agonistic encounters indicates only that the outcomes are nonrandom. Agonistic encounters qualify as dominance interactions "if, and only if, the subordinate recognizes the relationship, or 'predicts' the outcome of an agonistic encounter by immediately showing submission" (Bernstein 1980).—Weisfeld (1982)

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a *leader* or a *head.* In addition to possessing 'status,' leaders confer *syntality* (cohesiveness in goal orientation and locomotion) on a group. But Gibb's classification rests on the very same distinction we are making.

This brings us to status as *behavioral display,* which implies an ethological hierarchy—i.e. having lower status implies performing more social displays of deference.

Humans appear able to rank their conspecifics along the status dimension by either criterion alone. That is, the observation of (relatively unopposed) differential access to desirable things—by itself—or the observation of differential intensity and frequency of deference displays—also by itself—suffices for humans to infer hierarchies of 'social weight'. Of course, these two views on status are connected, and those with greater access to desirable things are also typically the receivers, rather than the givers, of deference displays.

Among nonhumans there seems to be one avenue to status: agonism (aggression, intimidation, violence, etc.—that is, *force* or *force threat*). The resulting social asymmetries are referred to as 'dominance' hierarchies in the ethological literature. The privileges that accrue to dominant individuals are (1) in males, preferential reproductive access to females, food, and spaces, as well as a disproportionate amount of grooming from others; (2) in females, preferential access to food and spaces, and disproportionate grooming. Despite some controversy, the evidence suggests that dominance correlates with fitness (Cowlishaw & Dunbar 1991; Ellis 1995). The stability of dominance is often reinforced through 'reminders': submissive behaviors by subordinates directed towards their superiors, whether or not these are directly induced through intimidation by the latter (e.g. subordinates groom superiors more than the reverse; subordinates will make submissive displays; subordinates will yield space to superiors; etc.).

In humans, on the other hand, status and its perquisites often seem to come from non-agonistic sources. Above-average performance in valued domains of activity may

yield higher status even when the individual in question hasn't the remotest claim to superior force. For example, paraplegic and wheel-chair-bound physicist Stephen Hawking—widely regarded as Einstein's heir and current occupant of Newton's chair at Cambridge University—certainly enjoys very high status throughout the world. Those who, like Hawking, achieve status by excelling in valued domains are often said to have 'prestige'.

This distinction between *dominance* and *prestige*—the two avenues to status in humans—has also been observed and studied in simpler societies. Krackle (1978) delineates the two avenues to status and leadership, which he terms 'force' and 'persuasion,' in his review of Amazonian ethnography and in his own fieldwork among the Kagwahiv. 'Forceful' leaders are domineering headmen who maintain their position and power through fear, threat and compulsion (see also Maybury-Lewis 1965: 215-40; 1967: 175-178). 'Persuasive' leaders depend on their influence and the consent of their followers, and lack the force to obligate them to do anything (see also Goldman 1979; Lévi-Strauss 1944; Huxley 1956:66-73, Arvelo-Jiménez 1971: 239-43; Clastres 1998). These two ways to affect the behavior of others, either *via* persuasion or force, correspond to our two types of status: prestige and dominance.

Throughout this paper we emphasize the distinction between prestige and dominance because these are the two types of status most frequently confounded in the literature, and because together they do appear to account for most of the variation in status asymmetries. However, the categories of prestige and dominance may not provide an exhaustive, psychologically grounded taxonomy of status processes. For example, a 'repayment' psychology, presumably selected for by the recurrent feature of reciprocity

and its mutual benefits in the small groups of the human ancestral environment, may create temporary, and occasionally long-term, situations of 'debt–status'. In these situations, an individual indebted to another for services not easily repaid (saving a life, a large loan, etc.) will begin to repay the debt by yielding deference-benefits to the individual, and using the ethology of subordinates in dominance hierarchies to signal a commitment not to default on debt-repayment (for reviews of ethnographic descriptions see Hayden 1995, Feil 1987). In terms of displays, calling this phenomenon *status* is not a problem for our definitions here. However, in terms of the flow of *material* benefits, at least in some cases, considering this as a form of status requires ignoring the fact that the net flow may be in the direction of the debtor (especially considering that such debts may be forgiven). We will address these complications in great detail in subsequent papers.

b) Summary of our argument

Humans appear to be the only species with prestige status. The reason why, we will argue, is culture. As Boyd and Richerson (1985) first made clear, the evolution of a cultural capacity—that is, the capacity for the social transmission and intergenerational persistence of information—must have created novel selection pressures on human psychology. Once cultural transmission became possible, a new selective environment was ushered in. In this environment, any mutations leading to an improved exploitation—for reproductive-success advantage—of the possibilities latent in cultural transmission would have been favored by natural selection. Over time, then, our ancestral psychology should have evolved (within existing physical and phylogenetic constraints) into an increasingly well-organized and specialized battery of biases jointly designed to extract

reproductive benefit from the flow of socially-transmitted information. We will show that prestige hierarchies, and related processes, are an emergent product of a social-learning psychology shaped by the selective pressures that the appearance of culture unleashed on the human evolutionary scene.

The capacity for culture arose because, relative to individual learning, copying others results in information-gathering savings, and in humans this selects for a proclivity for social learning and imitation, which in turn produces 'culture' (Boyd and Richerson 1985). However, if copying others is effective, then surely it is even better to prefer as models those with better-than-average information (hereafter: 'skills'), whether in the form of imitable performative skills, or acquirable knowledge. Hence, there is selection pressure for (1) the ability to rank potential models according to their skills (i.e. according to the quality of information they possess); and (2) a preference to imitate the highly ranked. Moreover, although copying highly-ranked models is better, copying from *up close* is even better: proximity to the model, in terms of both frequency of interaction and physical distance, improves copying fidelity and access to relevant details. So psychological mechanisms that increase the probability and quality of access—both perceptual and interactive—to the favored models should evolve. All sorts of asymmetries in the model's favor (such as 'kissing up'—e.g. by doing favors) make the copier a valuable interactant to the target model, who therefore grants greater access to the copier (such deferential copiers we will call 'clients'). Once everybody is doing this, however, something emerges at the group level: the more skilled models have the biggest and most lavish clienteles, so the *size* and *lavishness* of a given model's clientele (his/her *prestige*) provides a convenient and reliable proxy for model quality. This then selects for

a psychology which, *as a first guess,* immediately assigns highest rank to whomever has the most 'intense' clientele and then—as clues and evidence concerning the quality of the information borne by the model become available—refines the initial guess through individual learning. This is adaptive because it confers a potentially dramatic savings in the information-gathering costs involved in figuring out initially who to copy. From this a new evolutionary pressure arises: because possessing high quality 'skills' (i.e. 'information', 'expertise', 'performative skills' 'wisdom' , etc.) brings deferential—and therefore fitness-enhancing—clients, potential models should strive to out-excel each other.

This summarizes the basic story. In what follows we unpack and justify this story at length, both theoretically and empirically. We will also strive to convince you that many of the emergent processes observed in society and associated with prestige can be illuminated by the evolved psychology described above.

2. WHAT IS PRESTIGE?

Prestige is a commonly used word. Thus, if what ordinary speakers mean by 'prestige' corresponds closely with some described behavioral domain of interest then we ought to use this common meaning of 'prestige' and operationalize it rather than give it some new meaning—otherwise, readers inevitably will use their intuitions, based on the common meaning, and little will be communicated (a common problem in the literature on status). 'Prestige'—as commonly used—corresponds to one major area of psychological causation, with accompanying characteristic ethological displays and emergent sociological phenomena. Therefore, as a first step, we explore the common

usage of 'prestige' among English speakers. Since dictionaries derive definitions from common usage, they provide an ideal starting place. The following one is from Merriam Webster's Collegiate Dictionary ($1994:923)

> **prestige 1:** standing or estimation in the eyes of people; weight or credit in general opinion 2: commanding position in people's minds syn see INFLUENCE

Notice that the synonym is 'influence'—not 'authority,' or 'power,' or 'dominance.' We would argue that it's a connotation rather than a synonym, but the point is that someone with prestige is *listened to*, their opinions are heavily weighed (not obeyed) because the person enjoys credit, estimation, or standing in general opinion. There is nothing in the above definition about prestige inducing fear, for example.

> **prestigious 2 :** having prestige—HONORED.
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> **honor 1 :** a good name or public esteem : REPUTATION : a showing of usually merited respect 2 : PRIVILEGE 3 : a person of superior standing 4 : one whose worth brings respect or fame : CREDIT
> *syn* HONOR, HOMAGE, REVERENCE, DEFERENCE mean respect and esteem shown to another. HONOR may apply to the recognition of one's right to great respect or to any expression of such recognition. HOMAGE adds the implication of accompanying praise. REVERENCE implies profound respect mingled with love, devotion, or awe. DEFERENCE implies a yielding or submitting to another's judgement or preference out of respect or reverence.

All of this accords broadly with our own intuitions about the commonsense meaning of 'prestige.' A prestigious person deserves—in the eyes of the community—the superior standing which the same community confers. Prestigious individuals can certainly get others to do their bidding, but not because others fear retaliation, or because they believe the prestigious individual to be a legitimate source of *authority* or *power.* Rather, people with prestige get their way (and get others to do it for them) because others believe that they should; that they have earned the right—if not to be obeyed, at least to be listened to, and to have their opinions weighed more heavily, and their desires

considered more closely, than those without prestige. Prestigious people are also excused from certain obligations and obtain certain privileges. Moreover, none of this is begrudgingly conferred. The words 'respect,' 'awe,' 'devotion,' 'reverence,' and 'love' all connote that the deference enjoyed by a prestigious individual is one that other members of the community are willing to give.

One of the major works on prestige is Goode's *The celebration of heroes*. His definition and ours broadly agree:

> Prestige is the esteem, respect, or approval that is granted by an individual or a collectivity for performances or qualities they consider above the average [in valued domains of behavior]. —Goode, 1978:7)

Our bracketed addition doesn't reflect disagreement, for Goode includes this point elsewhere (Goode, 1978:8-9).

We believe prestige needs to be understood along three interlocking domains: ethology, sociology, and psychology. Ethologically, we need good descriptions of the action patters of both prestigious individuals and their clients in both dyadic and public interactions. Sociologically, we need an account of the social mechanisms (such as norms that determine legitimate avenues of achievement, morally 'good' and 'bad' behavior according to one's status, etc.) that channel prestige hierarchies into particular forms. Psychologically, we want an understanding of the arousal states and cognitive biases propelling both the ethological displays and associated behaviors, which jointly determine prestige hierarchies as an emergent social phenomenon. Together, these three perspectives provide a well-rounded account of prestige processes.

To sharpen our understanding of prestige we make a contrast with what it is *not.* An analysis of the ethologies of dominance and prestige illustrates our sharp conceptual distinction.

Rank hierarchies in chimpanzees and baboons (and other primates) result from agonistic encounters. Fear stabilizes these hierarchies by acting as an index for the relative costs of challenging the higher ranked. Subordinates practice avoidance, and typically avert their gaze from superiors—for to stare is to challenge (Schaller 1963; Goodall 1986); in dominance relationships deference is often transitive[2] (if A defers to B, and B defers to C, then A defers to C; see e.g. Strayer & Cummins 1980); and losses by the high ranking lead to changes in the rank order. The ethology of dominance in chimpanzees—our closest phylogenetic relative—consists of five broad categories of behavior, where each category may contain more than one action pattern (culled from Goodall, 1986):

Subordinates
(1) Proximity management: baseline avoidance of higher-ups;
(2) Submissive behavior after agonistic interaction (e.g. gaze avoidance, hunched shoulders, turning body away, lowered head, etc.);
(3) Occasional submissive behaviors without context or provocation;
Superiors
(4) Grandstanding (higher frequency of aggressive displays than subordinates in order to signal their position and have it confirmed);
Everybody but the alpha
(5) Occasional challenges to the rank-ordering (i.e. agonistic encounters initiated or resisted by the subordinate).

How similar are *prestige* hierarchies to *dominance* hierarchies? An ethnographic example from a society with prestige hierarchies but little or no dominance is instructive.

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[2] Although in chimpanzees, at least, the transitivity seems to be between hierarchical *levels* and not between individuals (Goodall, 1991:125). That is, coalitions of two or more individuals may obtain a certain rank, so some of the elements in the transitive set may be groups, rather than individuals.

The Semai are an indigenous people of Malaysia and are famous for having an ethos of nonviolence, for being acephalous, and for consisting of very autonomous individuals (Dentan 1979)—in other words, they are individuals who cannot be pushed around, which implies there is little or no dominance. The absence of dominance hierarchies is maintained and guaranteed by the readiness with which diffuse (community-wide) third-party punishment[3] descends on those who would arrogate themselves authority.

> At first it seems as if Semai communities are run by a council of elders. . .The elders in fact have no authority to enforce their decisions, however, and the variety of ways in which the Semai calculate age often makes it hard to tell just who the elders are. . . The fact that the Semai respect the elders does not mean that they have to obey them. . .A Semai takes heed of what his elders say. In the Semai phrase, he "hears" them. He does not interrupt while they are speaking, nor does he address them familiarly. . .On the other hand, after listening respectfully to them, he may reject their advice. If they press the point, he may say, "I don't hear you." Although a senior may have great influence over some of his juniors, he cannot order them to do anything they don't want to do.
> —Dentan (1979:65-6)

The Semai have three different ways of reckoning age, and the resulting ambiguity allows them considerable freedom in choosing their "elders". One way is chronological, but their counting system is "one, two, three, many, people guess rather wildly at how old they are" (*ibid.* p.66). They will use physical markers of aging as rough guides. Another method is on the basis of childbearing. That is, age category is jointly determined by whether the person has children and her current potential to have more. For example, (*ibid.* p.66) "A 'child' has no children and is not mature enough to have any. An 'adolescent' could bear children but has not done so," etc. The third method, relative age, allows an older person to call a younger person a 'child'. As Dentan stresses, "In short, a Semai should respect the aged. The rules for calculating who is an 'elder,' however, are

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[3] Third-party punishment occurs when a third party (i.e. neither the actor nor the receiver in a particular interaction) inflicts social, psychological, or physical punishment on the offending individual(s).

so flexible that a person has considerable leeway in deciding just whom he wants to respect" (*ibid.* p.67).

One avenue for Semai to become respected is through skilled oration ("Almost all influential Semai are good public speakers"; Dentan 1979:69)—and this is common to many societies. Another avenue to respect is unassuming generosity. Among the Semai, "The man who shares what he can afford without seeming to calculate his expenditure is likely to be popular. . .Many people will then call at his house and listen to what he has to say, a prime index of influence" (*ibid.* p.69).

How are prestigious Semai expected to behave?

> To give orders or to try to make others do something they don't want to do is to *persusah* them. Arrogating to oneself the authority to do so is *sumbung* [a pejorative term]. . ..Authority is thus a prickly problem in Semai society (p.65).
> The Semai speaker must be careful not to press his point too hard. He must be bold enough to speak out forcefully, but he cannot be too forceful. If his audience feels he is putting pressure on them, they will become resentful and uncooperative. Self-deprecation is therefore an important rhetorical trick, and most speeches begin with a phrase like "I'm getting old and deaf, but. . ."
> The popular man like the fluent speaker must play down his influence. . .He must not seem to seek power over others. . .nor to enjoy bossing them, or people will say, "His heart is big." Having the reputation of a big (that is, *sumbung*) heart is a sure way of losing influence (p.69).

Prestige appears to be a precarious thing; the influence it makes possible must be exerted delicately.

Dentan's ethological observations are limited, so we will combine them with our own informal observations of subordinates and superiors in prestige dyads—these, of course, await more ethological fieldwork for their confirmation. Our tentative ethology of prestige is as follows:

> **Low status 'clients':**
> (1) Proximity management: they are responsible for the overwhelming majority of the total time that they spend in interactions with superiors. (2) Dyadic interaction: eyes and posture directed towards the superior. Soft "mm-hmm's" accompanied by light nodding of the head. Avoid blank stares, but rather frown as if thinking, considering. Relative to the superior, they make few utterances. If superior pauses, even for an

unusually long period of time (as conversational pauses go), subordinate is unlikely to take the floor. (3) Public interaction: sing praises of superior and escalate these as others escalate. Offer denials of the self-deprecating offerings of superiors.

Superiors:

(1) Proximity management: they are responsible for a minority of the total time spent interacting with subordinates. (2) Dyadic interaction: free posture but no grandstanding, raising of the voice above conversation level, or making violent gestures with the arms and body. Speaks most of the time. If subordinate is speaking and there is a pause, superior is more likely to take the floor. Fewer "mm-hmm's" when subordinate speaks. (3) Public interaction: self-deprecating denials of whatever praises are extended, with expressions of gratitude. Posture is confident but does not become a swagger, and at key moments (e.g. beginning or end of the interaction, whenever the public roars approval, etc.) posture may become positively servile (bows, etc.).[4]

If we compare the above to the ethology of dominance as summarized earlier, prestige hierarchies don't look all that similar to dominance hierarchies—aside from the fact that they are both *status* hierarchies in which the lower ranked yield to higher-ups. In prestige, an individual acquires higher status through earned merit in the eyes of others. The admiration of 'clients', rather than their fear, is what promotes asymmetries. Clients actively seek contact with prestigious individuals and pay extra attention to them. Transitivity is common but weaker than it is in dominance because prestige hierarchies can be quite domain-specific,[5] and also because clients can shop around for the prestigious individual who offers the best deal. Both properties tend to muddy up the transitivity picture.

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[4] Some elements in the list may be culturally specific. Note however, that they do not for that cease to be prestige-related ethologies, and we would expect that locally varying prestige ethologies would have strong functional similarities despite their superficial differences. Also, some of the above points may be thought to be more sociolinguistic than ethological, but that distinction is arbitrary. We are a primate that speaks: sociolinguistic displays are part of our characteristic ethologies.

[5] Suppose, for example, that I defer to you because of your superior computer skills, and you defer to Bob because he is an excellent grass hockey player. If I don't care for grass hockey, I may not give any special deference to Bob despite the fact that you do.

Changes in prestige hierarchies are typically the result of (1) superiors disgracing themselves by proving themselves unworthy of previously received admiration, or (2) superiors being surpassed in achievement by former inferiors. Such changes to the hierarchy are emphatically *not* the result of losing violent contests (except when prestige comes from one's prowess in combat—but even here, one loses prestige by losing to one's enemies, or one's sanctioned competitors, not to members of one's clientele). A common way for high-prestige individuals to lose status is to behave as though they are *entitled* to the attentions of clients (thereby raising the cost of proximity to them) rather than grateful for their freely conferred deference, which points to the power of market choice that clients exercise—i.e. they are *clients*, not 'subordinates' (the term used for inferiors in dominance hierarchies).

Recent ethnographic work on the ethology of status in Benkulu, a medium-sized city in Sumatra, reveals that people with institutional offices (that is, with real power over punishments and rewards, and thus analogous to dominant individuals in non-human primate hierarchies) receive displays from subordinates very similar to those offered by non-human primates (Fessler 1995). However, these same displays are not offered to high-status individuals whose position derives solely from their individual above-average achievements, such as good poets (Fessler, personal communication).

If the ethologies in dominance and prestige respectively are different, then the psychologies underlying them plausibly are different as well. And if the psychologies are different, the selection pressures leading to one and the other must also be different. For example, if the ethological displays associated with FEAR and SHAME, found in dominance, are *not* expressed by clients in prestige interactions, presumably the

subjective emotions of FEAR and SHAME are also absent, and we may infer that there was no selection for such emotions in the case of prestige stimuli. Our account of the evolution of prestige, we hope, will justify our use of the common meaning of this word to label the psychological and behavioral domains that we describe, and also the sharp distinction we make between *prestige* and *dominance.*

Note an important caveat: in complex societies with non-kin-based institutional hierarchies many individuals with high status may simultaneously have dominance and prestige status components. Presidents and school teachers, for example, have real control over rewards and punishments on the one hand, but may also be perceived as doing a good job, on the other. What justifies our sharp distinction is not that individuals must always have only one or the other form of status, but that it is *possible* for humans to have only one or the other because the stimuli are fundamentally different (e.g. Stephen Hawking, for 'prestige', and a high-school bully, for 'dominance').

In what follows, we will first explore the ethology and sociology of prestige in order to derive clues about its underlying psychology. We will make a counterpoint to prior theories that, in our view, have failed to accurately map the territory to be explored. Following that, we will try to present an evolutionary account that explains the emergence of such a prestige psychology as a likely product of the selection pressures unleashed by the capacity for cultural transmission. And finally, we derive a number of testable predictions from our evolutionary theory, marshalling empirical evidence from anthropology, psychology and sociology in support of these predictions.

3. PRIOR THEORIES OF PRESTIGE

a) The sociological view

Goode's (1978) work contains much general sociological description and thus provides a good starting point for what a theory of prestige should explain.[6] In addition, many of his conceptual distinctions and observations are useful.

Goode begins by distinguishing three different avenues to status in humans (Goode, 1978:3): (1) Force and force threat, which we will call *dominance,* to harmonize with the non-human ethological literature, and to emphasize the phylogenetic ancestry of this kind of hierarchy; (2) Wealth; and (3) Prestige. He restricts use of the word 'power' to its 'force or force threat' connotations.

He also distinguishes (Goode, 1978:9-12) between emotion, or the feeling of respect towards an achiever (psychology), and the *display* of that respect (ethology), which is a matter of signaling. Another aspect of prestige signaling processes is the prominent role that socially recognized prestige symbols, such as medals, ribbons, degrees, flashy possessions, gaining membership in a prestigious group, etc., play as advertisements of putative achievement. It seems that individuals can motivate undeserved deference towards themselves by appropriating these often relatively honest signals of prestige (Goode, 1978:63-65, 110-117). Related to this, people have a strong

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[6] Some sociologists have concerned themselves only with particular prestige processes. For example, the functionalist (Davis & Moore 1945) and legitimation (Turner 1960, Della Fave 1980, Ramirez & Meyer 1980, Klaczynski 1991) hypotheses focus narrowly on occupational prestige, trying to answer why some occupations enjoy higher prestige. These are not general theories of prestige and we will therefore not examine them in detail.

bias for learning prestige rankings from others (Goode, 1978:103-105), and this is precisely what allows some to successfully 'cheat' the prestige system. Institutions create these relatively honest signals (medals, prizes, etc.) in order to motivate achievement within the institution by offering individuals the 'carrot' of prestige broadcast (Goode 1978:151-180).

Finally, Goode sees a mutual dependency between prestigious individuals and their clients. Borrowing many insights and analogies from economics, he analyzes what he takes to be the prestige 'market' in which clients pay deference to prestigious individuals in return for skilled performances (1978:19, 24-25, 64).

We need explanations for all of the above and more. Goode's discussion, however, lacks a theoretical framework that might allow him to link the sociological, ethological, and psychological components of the phenomenon. For example, he makes categories at the sociological level of reduction, and he gets three forms of status: dominance, prestige, and wealth. Others might want to include *legitimate* and *altruistic* status. In the first, status accrues to individuals occupying socially sanctioned (non-usurped) roles of authority. In the second, individuals gain status by performing acts beyond 'the call of duty', and provide the community with benefits in the form of public goods. But we argue that from the causal point of view—that is, from the point of view of the psychology which propels them—wealth, legitimate, and altruistic status can be classed as either *dominance* or *prestige*, or a combination of both.

Wealth can be interpreted by individuals as a proxy for skill (prestige), and/or it can be a source of power for individuals to create force or force threat by buying it (dominance). Likewise, individuals in positions of legitimate authority credibly control

the threat of group punishment if their authority is challenged, and this will elicit the dominance psychology/ethology complex. Concurrently, achieving a position of legitimate authority may be understood to require skill, and thereby elicit the prestige psychology/ethology complex. In addition, individuals in such positions may be perceived by peers and subordinates as genuinely skillful and thereby accrue further prestige. Finally, altruism-derived status participates in the prestige psychology, for such prestigious individuals are excelling in a valued domain, and the deference they get is freely given (e.g. Mother Teresa).

We agree with Goode's observation that prestige symbols may be used to cheat the prestige system. In our view, this is because by 'illicitly' appropriating prestige-symbols, an individual may jump-start an undeserved following, which then signals other social learners that here lies a worthy model, enlarging the following and making it a stronger signal of this model's worthiness, and so forth through positive feedback. Of course, this feedback cycle is vulnerable to the individual learning efforts of the clients. Sooner or later a client may succeed in exposing the cheater, but some posers may get away with it for a while. We also add the caveat that cheating in this way is possible only for those at the informational margins (i.e. those for whom it is not *obvious* that they deserve low status), and hence will only take place in societies large enough to create the necessary informational ambiguities about the relative achievements of individuals. In a small town or foraging group everybody knows everything, so this kind of cheating is probably not quintessential to prestige processes, but is a more recent development of complex societies.

This points to another problem we perceive in Goode's work: he only examines industrial societies. Certainly prestige in these societies must be explained, and a complete theory of prestige should incorporate them, but we believe looking exclusively at industrial societies may be extremely misleading, for the adaptive functions of our evolved prestige psychology are easily misconstrued if prestige processes are tangled in complex ways with other phenomena of recent historical invention (e.g. wage-based labor markets, and political or institutional bureaucracies). Small-scale societies (some small rural towns, foraging bands, horticultural hamlets, etc.), where social and economic relations more closely approximate the prestige-relevant variables of the ancestral environment, provide a better theoretical and empirical point of entry.

Goode's observations relating to the 'market' aspect of the prestigious individual/client relationship bear this out. Prestige processes do seem to have a market aspect, but Goode hasn't properly identified the goods being bought and sold. As noted above, Goode believes clients pay deference in return for skilled performances (1978:19, 24-25, 64). It is certainly true that people pay *money* in performance markets such as sports and music, but any deference paid seems entirely superfluous if money alone will produce the skilled performances. It is the *deference* that must be explained, for this is what establishes the existence of a prestige hierarchy. Otherwise, we have nothing more than a straightforward market exchange.

What is at stake in the prestige market, we believe, is *access* to the above-average performer. The performer grants access in return for deference, and the 'price' charged is a function of (1) her perceived skills/knowledge and/or achievement (where 'achievement' is a proxy for skill); (2) the amount of competition for clients in the market

(i.e. the number of other individuals who are also above average and can therefore compete for clients by offering cheaper terms of access); and (3) the size of a prestigious individual's clientele (in many domains, the bigger the clientele, the smaller the benefits of membership to the individual sycophant). On at least one occasion, Goode (1978:94) briefly considers this possibility, but he does not develop it and lacks an explanation regarding the underlying motivation for buying access to the skilled performer. We will supply one: clients buy proximity with their deference because proximity improves the chances of acquiring, via social transmission, any imitable traits that have contributed to the model's success.

We are claiming, then, that the need to imitate above-average performers is what ultimately sets prestige processes in motion. Relative prestige is merely the result of being freely deferred to by a number of individuals, who defer in order to be close enough to copy. Goode himself seems to have no intuitions concerning the fact that the behaviors and ideas of prestigious individuals are more likely to be copied, but many have preceded us in this observation (Dove 1993:147; Boesch & Tomasello 1988:597; Taussig 1993; Miller & Dollard 1941:266-268). Thus, we must explain why humans have a psychology that imitates overachievers in valued domains. Our answer states that, so long as excelling in valued domains enhances genetic fitness *on average*, there is a fitness advantage to preferring such skilled individuals as models. In the ancestral environment our evolved utilities were adaptive, and they biased the valuation of skill-domains. Hence, excellence in valued domains was usually adaptive in the ancestral environment.

Before we detail our theory for the evolution of the prestige psychology, we examine theories that have attempted to explain the evolution of prestige.

b) Evolutionary theories: Barkow, Hill, and Pinker

Barkow (1975, 1989) and Hill (1984a, 1984b) have put forth the only theories of the evolution of prestige. In Barkow's account, prestige is homologous to dominance, as the latter term is understood by ethologists. His theory maintains that the social rankings imposed through force and force-threat in non-human primates and other species somehow became the rankings of *merited* deference that we see in human societies. Missing from Barkow's account, however, is the mechanism that would have turned one kind of hierarchy into the other. If one wishes to explain prestige as an *exaptation* from dominance, the relevant selection pressures for the exaptation must be supplied, and these must reveal why prestige emerges as a different phenomenon, for there are very important differences between non-human (or human) dominance on the one hand, and human prestige on the other.

The differences described earlier between the ethologies typical of dominance and prestige hierarchies cast serious doubt on any straightforward homology between the two. Barkow appears to think the transition from one kind of hierarchy towards the other is a gradual 'ascent' towards humanity. "As one ascends the phylogenetic scale, a concept of social dominance purely in terms of threat and appeasement...becomes increasingly dubious." He points out that some (Chance, 1967; Chance, 1970) have suggested that "one of the key issues in understanding mammalian social ranking, particularly that of primates, involves attention. The high-ranking individual is the one the others attend to" (Barkow,1975:553). Hill (1984a:22) goes further and seems to hint that attention is *causally related* to the dominant individual's higher fitness. Both Barkow and Hill believe that if inferiors in both dominance and prestige hierarchies keep track of

superiors, this somehow creates an evolutionary link between the two phenomena, making them homologous.

But we must distinguish between evidence of dominance (e.g. differential attention) and its cause. Do we know of any cases where the dominance hierarchy was altered because subordinates started paying attention to a different individual—*without any agonistic encounters lost by the former alpha?* Higher-ups can hurt you, so you keep track of them—but you still won't stare into their eyes, for that is a challenge. In the absence of an explanation for why chimpanzees 'attend'—other than fear—Barkow's claim that social hierarchy is the product of attention is a non-starter, and no significance accrues to the correlation of status and attention, much less fitness and attention.

An exaptation story needs a 'why' that makes a potential exaptation *necessary.* Barkow's attempted 'why' has to do with female mate choice. We sketch his model (Barkow 1989:186-188) as follows:

> Importance of male parental investment → female preference for males with greater subsistence skills, and male preference for the same in females → both males and females compete intrasexually to increase skills related to resource acquisition → selection for skill → exaptation of dominance into prestige

Every link makes sense, except for the last one: how does selection for skill *transform* dominance into prestige? Barkow says that males with greater skills are capable of higher levels of investment, and they are also those with better cultural capacities (i.e. greater innate ability in social transmission). Females, then, in choosing skilled males, would be selecting males with greater cultural capacities. But the last link remains unexplained. Why is prestige an exaptation from dominance? And what exactly does he mean by prestige, female preference? Or does greater cultural capacity equal 'prestige'?

The last seems to be Hill's (1984a:18) answer. He defines prestige as "sociocultural fitness", or the ability of an individual to make a "contribution to the future concept pool". He proposes two models:

> (1) Altruism → prestige → diffusion of one's ideas → enhanced fitness (Hill 1984a:24)
> (2) Success → prestige → material benefits from others who want to be associated with the prestigious and thereby gain prestige by association → enhanced fitness (Hill 1984a:27-28)

In the first model, Hill does not explain why altruistic acts would bring prestige.[7] He also does not explain why being prestigious leads to the diffusion of one's ideas, although he does recognize that acquiring prestige increases their successful diffusion. Finally, it is unclear why the diffusion of one's ideas will improve one's biological fitness.

In the second model, he never explains what he means by 'success'. It is mentioned only in passing but it happens to be a crucial point. If we take his definition of prestigious individuals as 'good transmitters' (big contributors to the 'concept pool'), we can almost accept this model, except that we do not think Hill has identified the most important reason underlying client deference to prestigious individuals, namely, imitation.

Neither of these solutions is Barkow's, however. He suggests the following (Barkow 1989:150):

> Let us assume (assumption 1) that, among our protocultural ancestors, those males best able to learn and to transmit protocultural information tended to be the most able to provide parental investment and also to be the highest in status.

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[7] And what 'prestige' means here is not clear, since prestige *causes* one to spread ideas better, whereas elsewhere he defined prestige as the *consequence* of idea diffusion (prestige = sociocultural fitness).

Barkow recognizes that in humans some forms of status are highly correlated with skill. Instead of explaining this correlation, however, he assumes it. Notice that "those males best able to learn and transmit protocultural information" are obviously those with the best "cultural capacities," and Barkow earlier assumed (see above) that those with greater cultural capacities are also those with better skills. This, together with assumption 1, by which those with better cultural capacities are assumed to be higher status, is tantamount to assuming the correlation between status and skill. In other words, it assumes that prestige already exists. This makes it unlikely that Barkow's theory will explain the *transition* from dominance to prestige, which is the basis for his claim of homology between them.

In his 1989 book, Barkow's earlier argument remains unchanged: "If human and nonhuman social dominance have apparently been continuous, they must necessarily be homologous" (Barkow 1975:554). Human and nonhuman dominance may be continuous, yes, and homologous too, but it is unclear how this sheds any light on *prestige*. Barkow claims that dominance was exapted to become prestige in the way forelimbs got exapted to produce wings in birds—one replaces the other. But social hierarchies are produced by social *psychologies*, and psychological exaptations—unlike morphological ones—do not require the replacement of the previous function by the new one. An arousal state may be exapted to respond to a new stimulus while continuing to respond to the old one. Instead of homologous, perhaps dominance and prestige are, in some respects, pasalogous.

Barkow (1989:185-86) believes ontogeny recapitulates phylogeny—children developmentally play out the exaptation of dominance into prestige: as they grow into adults, they shed dominance and develop prestige. Yet, prestige is not absent in children,

and neither is dominance absent in adults. Coleman (1961), Eitzen (1975), and Weisfeld (1982), who looked at status processes amongst high-schoolers have shown that these adolescents exhibit both prestige and dominance hierarchies. In dominance hierarchies, agonistic encounters are actually rare and ritualized: participants send signals about who is likely to win a fight, and then the likely loser retreats. Barkow himself concedes that much of the ethology of dominance—which clearly contrasts with the ethology of prestige as described above—continues to exist among human adults: staring down (Modigliani 1971; Pfeiffer *et al.* 1974, Snyder & Sutker 1977), standing up, chest out, raising the voice; and the accompanying subordinate responses: averting the gaze, hunching the shoulders, leaving, appeasing (Maclay 1972; Ginsburg 1980; Eibl-Eibesfeldt 1974). He even notes that where rules against it are weak, or their enforcement difficult, dominance mushrooms—e.g. among unsupervised children in schoolyards; among the Yanomamö (Chagnon 1992); in the frontier days of European settlement in the American West; in prisons; etc.

Dominance remains with us. Individual humans appear to rely on different strategies. When the environment and the individual's genetic endowment combine to make dominance an option, it may be followed. However, most contemporary environments conspire against this by enforcing cultural rules against dominance, so that a would-be alpha is up against a whole group, not a series of dyadic encounters (Boehm

1993). Thus, in most societies, most of the time, humans try to *earn* their status. Prestige processes are pervasive.[8]

Finally, we consider Pinker's brief sketch of prestige, which he glosses as 'status'. We think his account captures how many evolutionarily-oriented researchers think about prestige. Pinker (1997:499) proposes the following:

> Status is the public knowledge that you possess assets that would allow you to help others if you wished to. The assets may include beauty, irreplaceable talent or expertise, the ear and trust of powerful people, and especially wealth. Status-worthy assets tend to be fungible. Wealth can bring connections and vice versa. Beauty can be parlayed into wealth (through gifts or marriage), can attract the attention of important people, or can draw more suitors than the beautiful one can handle. Asset-holders, then, are not just seen as holders of their assets. They exude an aura or charisma that makes people want to be in their graces. It's always handy to have people want to be in your graces, so status itself is worth craving. But there are only so many hours in the day, and sycophants must chose whom to fawn over, so status is a limited resource. If A has more, B must have less, and they must compete.

Some of Pinker's intuitions and observations harmonize with our own—however, we must note our disagreements. First of all, he does not recognize a dominance dimension to status. Secondly, he puts forward a standard goods-and-services economic model of exchange in order to explain the deference directed towards asset-holders. In other words, one directs deference towards those who control a good or service *in exchange* for that good or service. The idea is superficially attractive, but it fails entirely to explain the psychology and corresponding ethology of the phenomenon (i.e. the "aura or charisma"). If asset-holders have valuables, it makes sense to give them something in return, but how does deferential ethology get into the package? Why pay special attention to them outside of the exchange situation? Why find them *generally* attractive? And why

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[8] In *Human Universals*, Brown (1991) claims that prestige hierarchies are universal, and our review of the ethnographic literature has supplied no counter examples to this claim.

copy their behaviors? Why should having asymmetric assets lead to anything beyond trade? In short, why *status*? The hypothesis we advance below answers these questions.

4. EVOLVING PRESTIGE: THE INFORMATION-GOODS THEORY

This theory maintains that the status-relevant assets that prestigious individuals possess are various forms of valuable information. Sycophants flock to them and confer deference in order to make themselves valuable interactants, thus earning the right to close proximity and differential access to the desired models and, by extension, their information.

a) The importance of social learning.

From this perspective, then, prestige is a consequence of the evolution of imitative capacities in the human lineage, which are far more extensive, and qualitatively distinct, from the social learning abilities of other species (Tomasello 1994; Boyd & Richerson 1985; Durham 1991).

Much research from a variety of fields shows that humans rely heavily on social learning in order to build their repertoire of behaviors (Bandura 1977; Fiske 1998; Cavalli-Sforza & Feldman 1981). The essential difference between human and non-human social learning is that humans have what social learning theorists call *observational learning* or *true imitation*, which most other animals lack (Tomasello 1994:304; Tomasello et. al. 1993). In *true imitation,* the imitator attempts to copy the exact behavior or behavioral strategy of a model, including both the individual's motor

patterns and objective.[9] So, for example, when a human child learns to throw a ball, she tries to copy the model's arm motions and footwork as well as the objective (usually, getting the ball accurately to the receiver). In contrast, other forms of social learning do not involve the faithful transmission of both goals and motor patterns—e.g. *local enhancement, social facilitation, (goal)-emulation learning,* etc. (Whiten & Ham 1992). In local enhancement, for example, the would-be learner's chances of acquiring a new behavior are enhanced by proximity to the skilled individual, and therefore also to the materials (if any) involved in its operation. In this way, the learner has a greater chance of 'reinventing the other's wheel', but no imitation takes place.[10]

Assuming that chimpanzees lack true imitation, this capacity may have arisen in the human lineage some time after the split between humans and chimpanzees.[11] We claim this capacity provides the basis for the evolution of prestige. However, we must begin our story with two adaptations that seem to have predated the emergence of true imitation: skill-ranking capacities and discriminatory deference.

b) Ranking and deference

An ability to rank each other in terms of foraging success may be common among group-living species. This has been demonstrated for pigeons (Giraldeau & Lefebvre

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[9] Note that the goal need not always be *copied* from the model. The imitator may already have that goal and merely recognize it in the model.

[10] Tomasello (1994:301-318) discuses at length the differences between local enhancement and true imitation.

[11] It is not clear whether chimpanzees are entirely lacking in true imitative capacities (See Boesch & Tomasello 1998 and Whiten 1998). If it turns out the chimpanzees do rely on true imitation in the wild, our point of departure may need to be moved back to earlier in the primate lineage.

1986, 1987) and macaques (*Macaca fascicularis*, Stammbach 1988). 'Scroungers' are those who feed from others' finds, and they maintain proximity to 'producers' or food finders. This makes evolutionary sense: hanging around more successful foragers provides better scrounging opportunities than hanging around average or below-average foragers.

Successful foragers also receive increased deference from would-be scroungers. For example, some macaques (Stammbach 1988) not only maintain close proximity to successful foragers (in order to scrounge better), but also groom them (presumably so that their scrounging proximity will be tolerated). Note that these adaptations improve access to food through *scrounging*, and thus may arise independently of social-learning considerations. In fact, the data show that macaques do not copy at all, so these adaptations may have preceded the advent of true imitation.

Given true imitation,[12] it makes adaptive sense to combine it with preexisting ranking abilities and deference biases. Ranking abilities allow imitators to discriminate among potential models and imitate preferentially those with high quality skills. With deference, imitators can buy proximity to the preferred model, improving their copying reliability and fidelity. Notice the contrast to the macaque case, where individuals defer so that their scrounging will be tolerated rather than to learn anything socially.[13]

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[12] For a discussion of the evolution of true imitation see Boyd & Richerson 1996, 1989, and 1985.

[13] The above evolutionary sequence is not essential to our model, however. If ranking abilities and deference biases did not, in fact, precede true imitation, the emergence of the latter could still have selected for them. Individuals without a copying bias will be outcompeted by mutants who can discriminate among models and have deference biases to ensure proximity and thereby promote the acquisition of above-average skills.

One may wonder why, if rank-biased social learning is such a useful adaptation, other social-learning animals don't have it? But rank-biased social learning is useful only with true imitation, where the variation in model skill can be tapped. In both *local enhancement* and *goal emulation*, two types of social learning common in chimpanzees, for example, each individual re-devises—rather than acquires—its own technique or procedure. Suppose you are a chimpanzee and by watching others you've inferred a connection (as chimpanzees will) between reeds and getting termites—an example of *goal-emulation* social learning. Most probably, more than one individual in the group will know how to get termites with reeds, and each will have a slightly different technique with concomitantly varying degrees of success. But since you are not copying their precise action patterns, the variation in skill is not something you can tap. At the same time, the association between reeds and termites will be constant across termite-fishing individuals, and this association is all you get from them. Thus, it doesn't matter precisely from *whom* you learn, so why rank them? We predict that rank-biased social learning should only be found in group-living animals with true imitation.[14]

c) *Picky imitators and rank-biased transmission*

Coevolutionary models of individual learning and imitation show that imitative species ought to retain some reliance on individual learning even after the advent of true

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[14] This discussion may lead one to ask, if 'true imitative' learning is so great, why don't more animals possess it? Boyd & Richerson (1996) have modeled this problem, and convincingly argued that when most everybody is an individual learner, imitative learners cannot increase in frequency (i.e. cannot invade)—even though imitative learning is evolutionarily stable when common. Thus, under most conditions there is a significant barrier to the evolution of this capacity.

imitation (Boyd & Richerson 1985; Henrich & Boyd 1998). This is because anything acquired socially can be refined through individual learning, and because environments vary, a factor that will often devalue the knowledge gained by the previous generation. Together, individual learning, true imitation, ranking capacities, and discriminatory deference lead to a phenomenon at the population level that we call *prestige-biased guided variation* (after Boyd & Richerson's *guided variation*; 1985:ch.4). However, the process is appreciated more easily if we construct it in steps, so we will first consider the articulation of individual learning with rank-biased true imitation, and then we will add discriminatory deference.

Although true imitation doesn't make individual learning obsolete, a wide range of environments will create selection pressures favoring a substantial preference of imitation over individual learning (Boyd and Richerson 1985:ch.4; Boyd & Richerson 1988; Henrich & Boyd 1998). Humans are probably 'default imitators', that is, they usually (but not always) try first to learn whatever their cultural models are doing—saving themselves the trouble of 'reinventing the wheel' (precisely what makes imitation such a great trick). Then, after mastering the model's behavior, they seek to improve upon it through individual learning.[15] *Default imitation* uses social information when the costs of individual experimentation are greatest, and this is why it does better than strategies with a heavy initial reliance on individual learning.

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[15] Coevolutionary models of social and individual learning (Henrich & Boyd 1998) show that mutants who rely occasionally on individual learning as their first guess—instead of social learning— outcompete those who *always* rely on socially-transmitted information. This is because a small reliance on individual learning

We argue that pre-existing abilities to rank individuals (e.g. according to their food-finding abilities), combined with the imitative capacity, turning social learners into 'picky' as opposed to random imitators. A potential model is ranked highly not on the basis of particular skills, but on whether he/she shows better *results* in achieving desirable ends, such as obtaining sweets, fat, meat, etc.; saving time, avoiding pain, increasing mating success, etc. Achieving such ends satisfies utilities that evolved because, in the ancestral environment, they are good proxies for increased survival and reproduction probabilities. Since such results will be correlated with relevant skills that made them possible, imitating the high ranking will lead, on-average, to the acquisition of fitness enhancing traits.

Each generation, as clients imitate the most highly ranked (and therefore most skilled) individuals, the mean behavior of the population will move quickly towards the most adaptive solution for the environment which is currently available in the store of behavioral variation. To be perfectly clear, the population will move quickly (relative to genetic evolution and 'guided variation') towards those current behaviors that best satisfy the learners' *evolved utilities*. If the population is still in the environment where the utilities evolved, then these will indeed be adaptive behaviors. However, because imitators rank models on the basis of results rather than specific skills, and because imitation is *generalized* rather than for specific traits (this is defended below), maladaptive traits possessed by the highly ranked models can also piggyback in imitation along with adaptive traits.

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prevents individuals from getting stuck on the wrong behavior in spatially and temporally vary

d) *When picky imitators 'kiss up': the evolution of deference to skill*

Imitation benefits from the cooperation of the chosen model because perceptual access is the minimum requirement for imitation. Any picky imitators who can induce the model to grant better perceptual access will have an advantage over others, especially in the acquisition of more complex behaviors or behavioral strategies. For example, if the best hunter doesn't like you, you can't go on the hunt with him or imitate his superior hunting skills (e.g. tracking practices, approach methods, bow handling techniques, etc.). On the other hand, if you get on his good side and he lets you 'hang out', not only will you see him in action up close, but he may verbally share all sorts of knowledge and experience about the hunt (e.g. rules of thumb for interpreting spoor, tips on arrow manufacture, what to look for and avoid when approaching a potential prey, etc.). In order to gain proximity to the preferred models, imitators become *valuable interactants*, which they do by 'kissing up'—that is, by giving the preferred model an asymmetrically good 'deal' in all sorts of interactions. Imitators have thus evolved to do all sorts of things that the models were already adapted to seek or like in potential interactants, such as being especially trustworthy, offering all sorts of help without expecting anything in return, deferring to the model's judgment, being nice and helpful to the model's children, exempting the model from certain obligations *vis-à-vis* the imitator, etc. Therefore, rank-

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environments.

biased imitation exapts whatever deference-giving adaptations were already present for other purposes (e.g. scrounging), or, if necessary, it selects for their evolution.

At this point one might object that many behaviors can be imitated without getting too close to the model, so buying access with deference incurs unnecessary costs. This objection assumes that imitators know at what times they should be watching—i.e. that they have figured out exactly which of the model's many behaviors contribute to his/her success. However, the success of the model, like most behavioral outcomes, is likely the result of very complex interactions among a large number of variables. Being a good hunter, for example, could easily depend not only on specific skills such as making a good bow, knowing how to pull it properly, aim, etc., but also on tracking knowledge and skills, animal behavioral knowledge, approach and pursuit techniques, prey choice, likely location of prey, as well as more indirect factors such as sleeping properly, keeping a certain diet (e.g. eating lots of vitamin A-rich foods to maintain good eyesight), and observing certain habits, etc. This example illustrates that, given the prohibitive acquisition, storage, and analysis costs involved in teasing out precisely which behavioral combinations actually lead to the desired results in the model, evolution would instead make imitators rely on a *general copying bias.* That is, do as the model does, in general (Boyd & Richerson 1985:ch.8).

In any case, many behaviors—even those obviously related to a model's success—*cannot* be copied without close proximity to, and interaction with, the model; in fact, hunting skill would be one of them. Furthermore, the evolution of language liberated a great deal of information for social transmission that is difficult to infer through mere audio-visual perception. The disbursement of this language-bound information can be

tightly controlled by the model and thus creates even stronger selection pressures for imitator deference.

In terms of proximate mechanisms, whatever arousal states motivate freely-conferred deference in other species (for example, those which motivate scroungers to defer to producers) probably served as the precursors to the human emotion we would call RESPECT. This emotion strikes us as radically different from SHAME (Fessler 1999) and FEAR (or their homologues in non-humans), which presumably motivate subordinate deference in non-human dominance hierarchies and certainly in human dominance hierarchies. Some behavioral patterns, such as 'kissing up', are similar in the two hierarchies, but if the emotion states are different and respond to different stimuli, this is evidence that they were selected for by different evolutionary processes.

e) Broadcasting skill/knowledge: deference as an honest signal

'Status' equals the amount of deference received. In our species, it appears that those with non-agonistic status are also those with skill in valued domains of behavior. The present model can explain this: if skill in the model stimulates RESPECT in observers, which then motivates observer deference in order to buy proximity for imitation, we will get a positive correlation between deference and skill—a correlation that Barkow (1989) assumed rather than explained. This correlation provides an opportunity to save on information-gathering costs, for the distribution of deference can be interpreted as a summary of the relative quality of available models. Consequently, those who take advantage of the information contained in this distribution by directly imitating the more fawned-over models will be favored by selection because they save themselves the 'start-

up' costs of rank-biased imitation. In other words, by leapfrogging directly to a high quality model, such individuals reduce the costs (in time and energy) involved in gathering and processing the information that will point them to their first choice of model. In addition, the costs of not acquiring adaptive traits during this information-gathering period, or of making errors by choosing a model at random, are avoided.

The distribution of imitator deference is a reliable and honest signal of relative model worth because such signals are not easily faked. Imitators buy access to a model with deference but, since this implies costly behaviors, active imitators cannot deceive other potential imitators by deferring to someone they'd rather *not* copy without increasing their total deference costs and also losing some access to their preferred model in order to defer elsewhere. Active imitators also cannot easily conceal deference directed to the desired model, for the latter may fail to take notice and, by extension, fail also to provide the sought-after access. Nor can imitators save their deference displays for one-on-one interactions with the desired model, because models should evolve to require some *public* displays of deference as part of their 'price' in order to raise the probability of attracting more clients. Besides, targeting deference too narrowly (e.g. only when the model is alone) might curtail the imitator's right of access anytime the model is surrounded by others and displaying important copiable behaviors.

The *default imitation* rule, as stated earlier, is: 'most of the time, opt for cultural transmission from preferred models, and avoid initial individual learning and experimentation.' Now we can add to this: 'when using cultural transmission, and in the absence of disconfirming evidence, prefer models with the largest and most lavish clienteles.' In this way naïve imitators save most of the initial costs related to finding

those worthy of their lavish attention. Later, as information about relative skill differences becomes available, imitators can switch to a different model if they find a superior one. Concurrently, imitators should expend some effort improving their skills *via* individual learning.

The following simplified model will make this clear. Suppose society is composed of only three age classes (in descending age order): seniors (*S*), young 'uns (*Y*), and naives (*N*), and these move semi-discreetly through time as follows:

t		*t*+1		*t*+2
S	→golden years→	dead		
Y	→individual learning→	S	→golden years→	dead
N	**→copying →**	**Y**	**→individual learning→**	**S**
		N	→copying →	Y
				N

At time *t*, *N*'s have just appeared on the scene and don't know any better, so they imitate the *S* most 'fawned over' by the *Y*'s, who is likely to be highly skilled even if he is not the *very* best. Between *t* and *t*+1, the seniors grow older and begin to drop dead, so the *Y*'s rely on individual learning to enhance further their skills. Meanwhile, the *N*'s are making a switch to the *Y's*, trying to figure out who among them is the most desirable model, directing their deference towards them. This gradually stabilizes into a new deference distribution. Starting at *t*+1 the cycle repeats, and the new *N*'s use the mode of the new prestige distribution as their starting point.

Paine's description of the Naskapi, a group of arctic foragers, fits this model rather closely.

> Acknowledged expertise attracts, *though perhaps only temporarily*, what we may term a following of dependent persons. These persons will be welcomed as a principal source of prestige—as a capital benefit of the hunter's expertise. Nor is this expertise necessarily reduced or dissipated through having to share it with other persons attached to him.—Paine (1973, our emphasis)

Since every naïve starts out with what they perceive as the most deferred to individual—who will typically be one of the most skilled individuals—the above transmission mechanism ensures that everybody's initial goal is the best, or close to the best, currently available *meme* (transmittable idea or behavior). If imitation is reasonably reliable, such that most imitators acquire the target trait with only small error deviations, effective cultural traits can spread rapidly. This mechanism, termed *prestige-biased guided variation*, allows populations to approach adaptive optima much faster than they would under Boyd & Richerson's (1985) guided variation, which lacks the information-channeling force of prestige distributions. Note, however, that this is an emergent phenomenon, not the evolutionary justification for the adaptation, which arises from within-group selection.

A hunting example will illustrate the above argument. The *N's*, on any given day, can determine who among the *S's* had a better hunting day simply by comparing each hunter's returns. But it would be very risky to decide, on the basis of a one-day sample, which of the senior hunters in the group deserves to be selected as a model, for such one-trial samples typically reflect short-term variance rather than the real distribution of hunting skill. Only hunting returns averaged over a great many days will be reliable indexes of a relatively stable trait such as hunting skill. Thus, as an *N*, you would face

two options: (1) copy someone at random while you spend a lot of time accumulating sufficient observations to decide who should be your model; or (2) use the conclusions that others have already derived from their own long-term samples in order to decide who to start copying, and only then begin accumulating a sufficiently large sample of your own with which to later refine those borrowed judgments. Hunting returns are hard to fake, and if they bring prestige, they would tend to be advertised, so information-gathering costs for imitators are greatly reduced in the case of hunting (or foraging) because information about returns is readily available. The cost here is really associated with the problem of sampling over time: if time hasn't elapsed, you don't have a sample. Thus, on average, the second solution is better for a newcomer.

Of course, our figures of speech above rationalize the proximate mechanisms. Individuals aren't really thinking of choosing appropriate models to imitate. They merely (1) become more or less attracted to certain individuals (by experiencing more or less awe, respect, reverence, etc.), whether through cultural inheritance of other people's attractions, or as a result of individual assessments; (2) this attraction motivates multifarious deference; (3) such deference results in greater access to the skilled individuals; and (4) a general-copying bias for preferred models picks up large bundles of behavior from attractive individuals.

Although we have been using hunting as our reference example, and hunting is typically a male activity, these arguments apply equally well to females and to the whole range of typically female activities such as food gathering and child care.

f) Coevolution of imitators and their models

> *"We refuse one who boasts, for someday his pride will make him kill somebody. So we always speak of his meat as worthless. In this way we cool his heart and make him gentle"(Lee 1979: 246; said by Tomazo, a Ju/'hoansi, about hunters coming back with big kills)*

Highly-ranked males in dominance hierarchies are given to 'pride' displays, which include eyes that seek contact, squared shoulders, chest out, erect posture, stiff-legged gait, much charging, etc. Some versions of some of these behaviors are also evident in prestigious individuals. In prestige, however, pride displays are diminished, less common, and apparently very disappointing and unappealing, as if such displays contradicted a widely-held expectation to the contrary concerning prestigious individuals (Goode 1978:21-22 points this out). We believe there are two reasons for this: (1) To the extent that pride displays signal a dominant individual, they may scare off potential imitators/sycophants; (2) because clients have choices, and prestige-seekers compete for their attention, models may *learn* to avoid behaviors that increase the price of access to the client.

The first point leads us to believe that natural selection has modified human psychology, so that perceiving a *prestige*-status asymmetry in one's favor propels somewhat different cocktails of neurotransmitters and hormones than in dominance-derived pride. However, to the extent that a certain amount of pride (which involves behavioral displays and associated attitudes) makes a model less approachable, it may act to regulate the price, paid in deference, which is charged to imitators. A prideful person takes for granted the deference of others and is less inclined to repay it with goodwill (including, importantly, being accessible). Thus, access to prideful models require greater

amounts of deference. In addition, a certain amount of pride ethology may act as a good advertisement of status (and, by implication, skill), thus alerting potential followers. All the same, having to compete in the market for imitators may developmentally teach a given model to suppress pride displays, as the situation requires, even further below what natural selection has already accomplished genetically *vis-à-vis* dominance.

Since clients in prestige hierarchies can choose to whom they defer to, this creates a 'market'. Models are analogous to 'firms' competing for 'customers' (the imitators) who shop around for the best deal. However, these 'firms' can have too many customers. Initially, clients increase their model's fitness through deference but eventually, too many clients, or overly lavish deference, may actually decrease it. A good hunter's fitness, for example, initially increases with the number of clients because total deference received also rises, so the hunter may prefer having three sycophants to one. But would he want twenty? Beyond a certain clientele size, the prestigious hunter's own hunting success will decline. A large group with many imitators tromping through the forest may scare off potential prey and reduce the chances that the prestigious hunter bags the prey. So if beyond a certain clientele size hunting returns suffer, the hunter should raise the cost of access by acting more arrogantly and thus limiting the number of imitators. However, when limiting the size of one's clientele is not advantageous (e.g. great storytellers), or when there are other means to limit clientele-size (e.g. university professors) there is no point in acting arrogantly as one's prestige grows. On the other hand, when one's benefits do not come primarily from one's clients, prestigious individuals may learn that the costs of arrogance are not high (e.g. some movie stars). Finally, models should also have an incentive to control the quality of their clienteles, preferring, when they have the option,

above-average learners because the improved skills in these will became a good advertisement for the model, and new information acquired individually by such high-quality learners can also flow towards the model.

For clients, in many domains of skill, the benefits of access to the model will diminish rapidly with increasing clientele size. For example: if too many clients scare off the hunter's prey, the apprentices don't get to observe and copy crucial behaviors. More importantly, since the hunter has an incentive not to let this happen anyway, more clients means less individual attention from the hunter, and more distractions, which impoverishes the learning environment. Therefore, imitators may choose to pursue clientship with another model, especially if the new model lowers the sycophantic price of access to offer an attractive learning 'deal'. Because of this, even if model*B* is less skilled than *A*, *B* can siphon off clients from *A*. The full implications of this need to be carefully modeled, but we tentatively submit that the more competition there is for clients, the 'nicer' models should be. Thus, imitators have evolved to rank potential models not on their skill alone, but on the quality of the 'deal' being offered, where the number of imitators already around a model, and the amount of deference being paid, are significant components of that deal.

The last point makes the prestige market less like a market of firms and more analogous to an ecology of resource patches (the models) where consumers (the clients) distribute themselves by factoring into their calculations the richness of each patch and the number of consumers already there. This may lead some readers to the following intuition: If the dynamics of client choice are fast relative to those governing (1) the entrance of new naive clients and (2) improvements in model skill and price of access, the

system should quickly reach something similar to what ecologists call an 'ideal free distribution', where every 'deal' is the same for the next entrant into the system. From that point onwards the intensity of a model's clientele provides no information, so new clients should be indifferent as to their choice of model. As a result there would be no selection pressure for a psychology that is impressed by clientele intensity. Individuals should rely on individual learning rather than on the choices others have made about their models.

We think this intuition is wrong for the following reasons. First, since average skills can be obtained from one's parents without deference payments, individuals with average skill will have no clients, and the distribution of clients is therefore not over the total population of potential models, but only over those performers who are above-average. Thus, using the intensity of a model's clientele still narrows the naïve entrant's choice to those few skilled enough to have clienteles. Second, often there will not be a market but a monopoly by one skilled individual who is head-and-shoulders above the rest, and will therefore capture the whole client market. In this latter situation, a prestige-bias always takes the naïve entrant straight to the best copying 'deal'. Finally, the system is routinely bumped out of equilibrium by the death or injury of skilled models, and improvements in their skills. Individuals who can more quickly spot a rising star (a model who is becoming a big 'attractor') will have a better chance of becoming this model's client early on and acquiring valuable information from this model.

Aside from these theoretical considerations, the common phenomenon of 'prestige bandwagons' gives empirical support to the idea that humans rely on public information concerning the relative quality of potential models. When private information is

imperfect, minor random processes or active manipulation may generate 'information cascades' (Bikhchandani *et al.* 1998) or 'bandwagon effects' that cause certain individuals to gain an undeserved following (relative to their skill) for significant periods of time. This results when private information (individual learning) is inconclusive relative to public information (the observable distribution of deference). Random effects or manipulative efforts may fool a few individuals, and the presence of a few clients may fool a few more people, etc. However, note that this is mostly a modern phenomenon because substantial informational ambiguity was probably not common in the close-knit, small-scale societies of the human ancestral environment where the requisite anonymity for the bandwagon effects would typically be lacking.

When faced with competition, how does a skilled model reduce the price of access? We believe pride displays function as both a charging mechanism and an advertisement of that price. In order to lower the price, skillful models must learn to suppress pride displays. This explains the sometimes theatrical displays of self-deprecation and gratitude common among those with prestige-status, for they counterbalance what everybody can see: the obvious satisfaction that prestigious individuals take in their social position (this is where the term 'false modesty' comes from—everybody knows that often it is not heartfelt). How much modesty one should display is a matter that one learns as one experiences the relative costs and benefits of charging higher or lower prices of access by displaying more or less pride in one's achievements.

This coevolution of prestige-seekers and clients accounts for much of what we see among the Semai (Dentan 1979) and throughout the ethnographic record (Kracke 1978).

Generally, prestigious individuals tend to be 'nice.' They don't take their clients for granted, nor boss them around, especially when it is very clear that these clients can go 'kiss up' to somebody else. At the same time, clients are finicky, unwilling to tolerate too much arrogance (i.e. the raising of the price of access) in those they regularly defer to in the *prestige* market. In our own societies this is evidenced in the ritualized displays of self-deprecation that we often see among prestigious individuals. For example, it is common and expected for those receiving applause and awards to publicly 'doubt' that they really deserve these, and to attribute the gesture more to the generosity of their clienteles than to their personal achievements (ball players usually thank the fans; Oscar-winning movie stars always thank everyone). The American stand-up comedian, for example, exits by thanking the audience profusely, bowing repeatedly, and assuring them that they have been a great audience—i.e. the ostensive message is that the 'apparent' success is more a function of the public's benevolence than the comic's own prowess. The ritual response by an especially pleased audience is to bring such a self-deprecating performer back on-stage (through unceasing applause, hollering, and whistling) in order to prove him/her wrong.

g) Why does the provision of public goods bring prestige?

The ethnographic record shows that altruism-derived prestige (which accrues to individuals who incur costs 'beyond the call of duty' to serve a public good) is very common. The selective forces we have described here do not—by themselves—account for this phenomenon. Why would individuals be motivated to defer to public-goods altruists? First of all, deference will not buy the altruists' contribution, should it depend

on it, because those who 'cheat' and don't defer will have higher fitness. Secondly, one should not want to copy an obviously costly behavior. However, it's quite possible that excelling in domains that generate public goods increases the social salience of the model's skill and accomplishments. If every time a hunter brings back meat he distributes it to the group, the hunter's skill and returns are more likely to be noticed by all others—every time he or she succeeds you get to eat meat (which is very important to foragers). In this way, prestige-seekers can more effectively broadcast their skills and abilities to potential clients. All other things equal, models who excel in domains that allow them to better broadcast their abilities will gain more clients, more prestige and more fitness-enhancing deference. Consequently, prestige seekers and future models should prefer to excel in domains that provide the best opportunities for them to showcase their abilities, skills and knowledge. Supplying public goods is an effective means of increasing broadcast efficiency (Smith & Bird 1999)[16].

It's also possible that prestige processes interact with cultural group selection processes (Boyd and Richerson 1990; Soltis et. al. 1996) to make public-goods altruistic behavior worthy of prestige deference. Cultures that exalt, reward or esteem group-beneficial behaviors or attitudes will have a competitive advantage *as groups* and will tend to proliferate at the expense of those that have no such innovations. Therefore, in

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[16] This account differs from Smith and Bird's work (1999) in that prestigious individuals prefer activities with high broadcast efficiency because they want to show-off their skills, so they will be considered high-quality models, and receive more clients and greater deference. In contrast, Smith and Bird believe individuals do this to signal their high quality as potential allies or mates, not as potential models. As you will see in the evidence section, Smith and Bird's data are equally, if not more, consistent with our theory.

cultural evolutionary time, the frequency of groups that reward with esteem any and all group-beneficial behaviors should increase relative to those that do not. Once a domain becomes culturally-valued, the prestige psychology will cause individuals to confer respect on those who excel in it.[17]

5. PREDICTIONS AND EVIDENCE

Above, we have constructed a model for the evolution of proximate psychological mechanisms that more advantageously utilize the reproductive benefits of socially transmitted information by speeding and improving the acquisition of fitness-enhancing traits. Our model makes certain predictions about consistent behavioral and sociological patterns that we ought to see in humans. Below, we discuss the evidence for both the assumptions in our model and some predictions flowing from it, as well as predictions that—to our knowledge—have not been tested, whether directly or indirectly. Although some predictions are unique to the model presented here, many items that follow can individually be accounted for by one or more alternative theories. However, no theories that we've found can account for *all* or even most of the items below the way that our information-goods theory does. Thus, we encourage you to consider the wide range of converging ethnographic and experimental data accounted for by the information-goods model.

Their theory suffer difficulties in explaining all the patterns of imitation, deference, ethological displays and opinion leadership that accompany prestige status.

[17] See Henrich & Boyd (1998), and Boyd & Richerson (1990, 2000) for a discussion and models that show the feasibility of group selection in cultural populations.

a) General predictions about prestige, skill and age

Skilled individuals have higher status: As stated in the introduction, status has two components: asymmetrical benefits in favor of, and deferential ethologies towards, the highly ranked. Unfortunately, ethnographers often limit themselves to speaking colloquially about status and thus grouping both effects when they write about the relative statuses of individuals. Much of the ethnographic evidence can therefore not be uncoupled in order to substantiate the two more specific predictions, namely, that skilled individuals get 'perks', and that they get displays of deference. There is, as yet, no experimental or rigorous observational data linking skill to receiving more 'perks' and displays of deference, but this is an important prediction and further research could strongly tell for or against our hypothesis.

The ethnographic record supplies numerous examples of the relationship between skill and status. Hunting skill in particular seems to be a salient avenue to status in foraging, horticultural, and pastoral societies. After reviewing the literature on foraging societies, Kelly claims:

> Ethnographic data indicate that hunting (that is, the hunting of large game) is always a highly valued activity ... and the development of hunting skill is a primary way by which men can acquire prestige...Good hunters among foraging societies do indeed acquire prestige from being good hunters.

Numerous other researchers have made this observation for specific groups.[18] Among the Kuna, for example, an island-living population that hunts and plants crops on

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[18] **Cubeo**: Goldman 1979:57; **Aché**: Hawkes 1991; **Kung!**: Lee 1979; **Naskapi**: Moore 1957; **Kuna**: Ventocilla et. al. 1967: 39-40; **Shuaranahua**: Siskind 1973; **Cashinahua**: Kensinger 1995; **Efe**: Bailey 1991; **Shavante**: Maybury-Lewis 1967; **Meriam**: Bliege Bird & Bird 1997; **Siriono**: Holmberg 1948:58; **Yuquí**: Stearman 1984.

Panama's Caribbean coast, a lifetime record of tapir kills is kept (i.e. remembered) for each male. Males with the most tapir kills (a measure of hunting skill) receive higher status (Ventocilla et. al. 1967: 39-40). Among the Naskapi, hunting knowledge about animal migratory patterns, feeding cycles, tracking, etc., confers prestige (Moore 1957). Among the Cubeo, Goldman (1979:57) writes, "hunting, in summary, is a distinctive pursuit and marks one for prominence" (jaguar teeth are used to make girdles, which mark one's high status). Among the Siriono (Bolivian foragers), Holmberg (1948:58) notes, "If a man is a good hunter, his status is apt to be high." Stearman (1984) confirmed for the recently settled Yuquí, who are probably closely related cultural relatives of the Siriono.

In addition to hunting, excelling in the following domains is also commonly associated with status throughout the ethnograhic literature, particularly in simpler societies: combat (e.g. Yanomano, Chagnon 1992; Achuar, Patton 1995), oration (e.g. Semai, Dentan 1979:69; Benkulu, Fessler 1995; Kuna, Howe 1996; Kung, Lee 1979: 343-44), and healing/supernatural knowledge (Lee 1979: 343-44;). For example, combat skill or raiding success was closely linked to status among the Mundurucu of the Brazilian Amazon. In this horticultural population, men are accorded prestige according the number of trophy heads taken during raids on other ethnic groups (Murphy 1960). Similarly, when a 'great man' dies among the Iatmul of New Guinea, "a figure is set up by the members of his initiatory moiety to represent him and is decorated with symbols of all his achievements. Spears are set up to the number of his kills..." (Bateson 1958:48). Farming and herding skill is perceived to be an important criterion for status in small

farming communities in rural New Zealand and, moreover, people feel that this is 'natural' and in need of no justification (Hatch 1992:98-90).

Unfortunately, few ethnographers have sought to quantify prestige in terms of clientele intensity (amount of deference received), so we must rely on interview data and the ethnographer's own unsystematic observations, intuitions and opinions about who is prestigious and why. Despite such methodological shortcomings, however, much ethnographic data remains useful, because: (1) our scientific definition of prestige closely parallels common usage and most ethnographers' apparent intuitions; and (2) many of the ethological signals of prestige (certain types of deference, etc.) are probably human universals (just as they are for dominance), making the ethnographers' intuitions about the relative prestige among individuals fairly reliable.

For a sociological perspective, we turn to Coleman's (1961) study of *The adolescent society*, in which he asked adolescent males two questions directly relevant to *prestige*: (a) "what does it take to get to be important and looked up to by the *other fellows* here at school?", and (b) "which of these items is most important in making a fellow *popular with the girls* around here?". The students gave the following rank orderings (1=most important; first column corresponds to question (a):

[Table 1 about here]

The emphasis on skill in sport as a relevant domain may be an American or Western fixation, but perhaps not. In the ancestral environment, information that led to improvements in dexterity and physical prowess would have been paramount in the main avenues to prestige for men: hunting and combat. And, as we've shown, the ethnographic

record certainly confirms the connection between these domains of skill and male prestige.

Prestigious individuals get 'perks' or privileges, and are excused from certain social obligations: Those with real or perceived skill will see an asymmetrical flow of benefits in their favor. Pinker's story also makes this prediction (Pinker 1997:499; see above), but fails to explain deferential ethologies (see below).

A variety of ethnographic data confirms this prediction. Bateson, for example, found a case among the Iatmul in which a man "had sufficient standing in the community to marry his own wife's own mother and this while his wife was still alive and married to him. He was a great sorcerer and at the same time a great debater and fighter. It was nobody's business to say him nay..." Bateson (1958:91). Similarly, among the Aché of Paraguay, Hawkes (1990, 1991) reports that Aché males allow or, more frequently, 'overlook' sexual liaisons between their wives and highly skilled hunters.

In simple societies, the elderly tend to be prestigious, perhaps due to their accumulated experience (see below), and this often translates into specific institutionalized perquisites and norm exceptions. The following age-perks illustrations are culled from Simmons (1945): Aged Omaha were no longer obliged to scarify themselves when someone died (La Flesche 1889:6). Young Omaha women and girls were required to sit in a certain modest and dignified manner, but old women could sit with their feet stretched out in front—this was considered a"privilege of age" (Fletcher & La Flesche 1905-6:329). Among the Tasmanians, the old people get the best food (Bonwick 1870:64, 80); Beer drinking was formerly an exclusive right of Akamba 'grandfathers', and the wood from a certain 'spirit tree' could only be used an old man or

old woman (Dundas 1913:494-495, Hobley 1922:32-33, Lindblom 1916:97); Old Todas were accorded special privileges in the 'catching of buffalo' at the funeral services (Emaneau 1938:109-111); in some villages aged Ainu had the exclusive privilege of conversing with foreigners (Pilsudski 1909:xiii; 1912:72); Aged Crow were excused from certain unpleasant tasks and at the Sun dance ceremonies they were free to move at will (Lowie 1913:20, 30); Among the Sema Naga only the old men were allowed to keep calendars (Hutton 1921:234, 260).

For elderly women the 'perk' often becomes a more equal status and treatment with men. For example, certain very old women among the Arunta (Spencer & Gillen 1899:134) and among the Kwakiutl (Curtis 1915:56, Boas 1895:419) were allowed to share in the tribal secrets; post-menopausal women among the Chippewa could attend the Mide feast which was forbidden to others (Densmore 1920:123); elderly Pomo women could smoke with the men and were sometimes allowed into the men's sweat-houses (Loeb 1926:160, 188); Chukchi elderly women are allowed to eat with the men (Bogoras 1904:548).

Several experiments also support the prediction that prestigious individuals get more perquisites. For example, Bickman (1971) showed that subjects are more honest towards high-status individuals. The status manipulation was "dress", and its validity was demonstrated. The experiment involved leaving a dime in a phone booth, and waiting for a random user to pocket the free money. After a significant pause, a confederate would go up to this person and ask whether they had seen a dime that he may have left at the booth. When the confederate was smartly dressed in a business suit and tie, the dime was more often returned than when he was dressed in a ragged and disheveled manner.

Like Bickman, Ungar (1981) manipulated status with clothing and found that when high-status individuals offer excuses (claiming that somebody else is to blame) rather than apologies for minor infractions, these excuses ameliorate subsequent derogation relative to derogation following equivalent behavior by low status individuals, even though they do not succeed in shifting the perception of blame.

Older individuals will tend to get more prestige than younger ones. This is a corollary of the preceding prediction. Age is a proxy for skill/knowledge/success; the more someone has lived, the more skills he/she has likely accumulated, and the more refined these will tend to be. Besides, simply living longer is a complex 'skill' with imitable components. Deference toward elders allows proximity and thereby acquisition of longevity-relevant and other information. The greater skills, on average, of elders, will make them prestigious. This reasoning predicts both a general correlation between age and prestige, and that elderly individuals will maintain their status well past their prime.

This prediction does not hopelessly confound prestige with dominance, or with conventional reciprocity, for two reasons: (1) one can examine the ethology and psychology of younger individuals towards older ones in different contexts and determine whether it is prestige or dominance; (2) Not all individuals who are older and get deference have the ability to deploy *force or force threat*, and they often are unable to reciprocate good turns in tangible currencies. In contrast, among non-human primates, elderly individuals, who are losing their coercive powers, fall rapidly through the status hierarchy. Even among male chimpanzees, whose status is built substantially on the coalition-building aspect of their coercive abilities, elderly males do not often maintain their status well into their golden years the way humans often do. Older nonhuman

primates also accumulate knowledge and experience with their years, but nonhuman primates lack sufficient capacities for cultural transmission that allow this information to be tapped. Thus, younger nonhuman individuals have no adaptive reason to confer status on weak, elderly individuals.

Since the empirical work of ungluing dominance and prestige ethologies has just begun,[19] we focus on the prediction which concerns the elderly. Very old people, who can no longer contribute to the economy of the households or communities that continue to support them, nevertheless often receive great amounts of prestige and sometimes awed reverence bordering on veneration. The elderly have very limited ability to obtain and defend resources, particularly if they are sick or infirm, and thus a reduced ability to engage in reciprocal exchanges or the deployment of force. However, they have proved their ability to *stay alive,* and presumably possess the skills that allowed them to do so. Furthermore, they may possess knowledge and experience accumulated over the years. For example, the elderly may be the only people who remember what to do when a rare drought, flood or hurricane hits.

Simmons (1945) published a very broad cross-cultural survey entitled *The role of the aged in primitive society.* It included 72 simple societies from all areas of the world, and forms a diverse sample of simple societies across the board. Of these 72 societies, 69 are known from ethnographic rather than historical sources, so we focus on those here.

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[19] But if you grew up with younger cousins or siblings, perhaps you remember the extent to which you were a 'hero' largely as a result of being an older cousin, and not as a function of intimidating them. In fact, to the extent that you *did* intimidate them, their admiration for you probably suffered. We believe this means the ethologies of status to elders will be in general be closer to prestige than to dominance ethologies.

For five of these societies, there was no explicit mention by the ethnographer of respect paid to the aged. However, such respect may be inferred from other reported facts such as a custom or requirement that chiefly roles be filled—and/or other important functions be performed—by the elderly,[20] or from special privileges granted to the aged (Toda: Rivers 1906:156). For another 46 societies, there is explicit ethnographic mention of (sometimes quite extreme) respect, deference, reverence, homage, or obeisance to the aged.[21]

The proportion of simple societies that respect their aged may be higher, however, for this count represents merely the lower limit; for the remaining societies there is an

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[20] **Mapuche (Araucanians)**: Smith 1855:190, 252; **Shuar (Jivaro)**: Karsten 1923:8, 20; **Akamba:** Dundas 1913:493, 494; **Chukchi**: Bogoras 1904:548.

[21] **Yahgans**: Cooper 1917: 160, 170, Garson 1886:114; **Arawak**: Im Thurn 1883:183; **Semang**: Murdock 1934:100, Skeat & Blagden 1906, vol.II:171; **Andamanese**: Mann 1883:14, Radcliffe-Brown 1922:44, 69, 73-74, 79; **Tazmaninans**: Bonwick 1870:64, 80; **Arunta**: Spencer & Gillen 1899, vol.I: 39, 161, 223, 248, 398; **Labrador Inuit**: Hawkes 1916:71, 117, Turner 1894:190, 200, 260-261, 269, Hutton 1912:290; **Chippewa**: Kohl 1860:273, Densmore 1920:122, Jones 1861:69, 78; **Omaha**: Fletcher & La Flesche 1905-6: 50, 329, 335, 370, Dorsey 1881-82:217, Dorsey 1894:368; **Pomo**: Loeb 1926:198, 237-241, 271, Barrett 1917:444, 452; **Ainu**: Batchelor 1895:109; **Yukaghir**: Jochelson 1926:107-109; **Kwakiutl**: Curtis 1915:139, 217, Boas 1909:440-443; **Haida**: Niblack 1890:240, Harrison 1925:64-65, Swanton 1925:51; **Navaho**: Reichard 1928:52, 56, 95; **Lango**: Driberg 1923:52-73, 243; **Tuareg**: Campbell 1918:94, 208, 224, 233; **Berber**: Westermarck 1926, I:46, 420; **Hottentots**: Hoernlé 1925:21-22, Hoernlé 1918:68; **Xhosa**: Kidd 1904:22-23, 29; **Yakut**: Sieroshevski 1896:465, 510-513; **Creek**: Swanton 1925: 80, 367; **Hopi**: Simmons 1945:58-59; **Bontoc Igorot**: Jenks 1905:39, 74-79, 168; **Iban**: Roth 1896, I:195; II:227, Gomes 1910:62; **Kiwai**: Landtman 1927:175, 236, Landtman 1917:7; **Moguru**: Landtman 1927:353-356; **Maori**: Firth 1929:317; **Asante**: Rattray 1923:81, Rattray 1929:13; **Dahomeans**: Herskovits 1938, I:351; **Palaung**: Milne 1924:51, 189, 205, 314-315; **Witoto**: Hardenberg 1912:16; **Carib**: Gillin 1936:137; **Crow**: Lowie 1917, Pt.1:63; **Samoa**: Williamson 1924, II:367; **Sema Naga**: Hutton 1921:97; **Polar Inuit**: Rassmussen 1921:16-22, 123, Ross 1819:134; **Inuit of Point Barrow**: Murdock 1887-88:427, Ray 1885:39, 43-45, 47; **Bakongo**: Weeks 1914:42; **Mongols & Kazakhs** Howorth 1876, Part IV:76-77; **Veddas**: Westermarck 1906; **Trobrianders**: Malinowski 1916:360, Malinowski 1929, I:30; **Munda**: Sarat 1912:426.

absence of observations on this topic, rather than contrary evidence. Indeed, Simmons (1945:79) observes that "the most striking fact about respect for old age is its widespread occurrence...practically universal in all known societies." But he also notes (*ibid.*) that "There have usually been extenuating circumstances, qualifying conditions, and...a "prime of life" in old age—when prestige has been attained; and other circumstances under which it has been denied or has practically disappeared."

Tellingly for our hypothesis, the most important moderating variable seems to be the elderly's obvious skills/knowledge or lack thereof. For virtually all of the societies mentioned above there is ethnographic mention of recognized bodies of knowledge that only the aged possess, or possess in obvious superabundance relative to younger people. These areas include magic, lore, hunting skills, calendrical & traditional knowledge, medicine, etc. Furthermore, for many societies the ethnographer observed that respect towards individual elderly persons varied considerably, and that those aged persons with acknowledged expertise in a valued domain were most highly respected. Often the natives themselves explicitly recognized such specific achievement—or else general wisdom accumulated through the years—as responsible for the respect they accorded their elders.[22] In those cases where the ethnographer reports neglect of the aged, it appears

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[22] **Arawak**: Im Thurn 1883:183; **Andamanese**: Mann 1883:14, Radcliffe-Brown 1922:44, 69, 73-74, 79; **Arunta**: Spencer & Gillen 1899, I:12; **Dieri**: Howitt 1891:297; **Labrador Inuit**: Hawkes 1916:71, 117, Turner 1894:190, 200, 260-261, 269, Hutton 1912:290; **Pomo**: Loeb 1926:198, 237-241, 271; **Navaho**: Reichard 1928:52, 56, 95; **Tuareg**: Campbell 1918:94, 224, 233; **Xhosa**: Kidd 1904:22-23, 29; **Yakut** Sieroshevski 1901:78; **Creek**: Swanton 1925:78; **Hopi**: Simmons 1945:58-59; **Bontoc Igorot**: Jenks 1905:39, 74-79, 168; **Iban**: Roth 1896, I:195; II:227, Gomes 1910:62; **Asante**: Rattray 1923:7, 11, Rattray 1916:????; **Lango**: Driberg 1923:67; **Dahomeans**: Herskovits 1938, I:351; **Witoto**: Hardenberg 1912:16;

invariably to follow the onset of senility and decrepitude, which makes the transmission of valuable information difficult or impossible. When variability in respect is extreme, with some elderly but not others suffering serious neglect, ethnographers typically report that the aged can only escape neglect if they possess valuable knowledge and skills.[23] Simmons (1945:50-51) concludes:

> Most primitive societies have insured some respect for the aged—often remarkable deference, in fact—at least until they have become so 'overaged' that they are obviously powerless and incompetent. But under close analysis, respect for old age has, as a rule, been accorded to persons on the basis of some particular asset which they possessed. They might be respected for their extensive knowledge, seasoned experience, expert skill, power to work magic, exercise of priestly functions, control of property rights, or manipulation of family prerogatives. They might be highly regarded for their skill in games, dances, songs, and storytelling.

The extent of deference paid to the elderly is evident in their political involvement. Lacking the wherewithal to impose themselves physically for domination, their political influence (sometimes, hegemony) must be a direct result of the deference which their prestige inspires. For a full 52 of the societies in Simmons' sample, aged chiefs were reported, and, for many of these societies, advanced age was in fact a *requirement* for the role. There is also widespread participation of the aged in councils and they tend to be generally influential even when there is no institutional office to fill.

Silverman & Maxwell (1978) tested their "information-esteem hypothesis", which states that in community-level societies (rather than states), the elderly receive respect in the measure that they "know something which younger people consider relevant." In a

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Samoa: Mead 1928:38, 56, 192-193; **Polar Inuit**: Rassmussen 1921:16-22, 123, Ross 1819:134; **Inuit of Point Barrow**: Murdock 1887-88:427, Ray 1885:39, 43-45, 47; **Carib**: Gillin 1936:137.

[23] **Arawak**: Im Thurn 1883:224; **Tasmanians**: Bonwick 1870:64, 80; **Yakut**: Sieroshevski 1896:465, 510-513; **Hopi**: Simmons 1945:58-59; **Witoto**: Whiffen 1915:170.

randomly selected sample of 34 small-scale societies from around the world, they found that in only two was there no ethnographic mention of deference towards the elderly.

In modern industrialized states the elderly seem to have lower status than they do in most primitive or small-scale societies. This may occur because the accelerated rate of change in modern state environments creates the infamous 'generation gap', which stands for all sorts of cultural adaptive lags that result when rapid infrastructural change (with accompanying ideological change) causes the next generation to be born in a much different environment than the previous one. The generation gap may degrade the perception that the store of knowledge accumulated by one's elders is still useful, with a corollary downgrading in elderly prestige. The public welfare institutions characteristic of modern states may add to this effect by changing the perception of longevity from an individual achievement requiring skill, to a benefit resulting from rationalized institutional structures at the state level, and to a certain degree independent of individual effort or talent. In general, we predict a negative correlation between rate of directional sociocultural or environmental change (i.e. trends rather than fluctuations), and the prestige of the elderly. The faster the rate of change, the less adaptive the information possessed by the elders.

Skillful individuals are attractive. Those with real or perceived skill will be popular. Their deferential following will experience pleasure from proximity to, and interaction with, them—which proximity and interaction is *freely chosen* and sought rather than coerced and fearful, as it is in dominance. As Barkow (1970:87) says of the Maguzawa:

> The rival of the Sarkin Arna [village head] is the Sarkin Noma, the 'king of farming'. The title is given to a very successful, wealthy, generous farmer. Formerly it was part of traditional political structure..., and even today its

> bearer is liable to be more respected and better liked than the Sarkin Arna who is, after all, associated with the Moslem hierarchy and a tax collector; but the Sarkin Arna is more feared. Among the Moslem villagers, the title "Sarkin Noma" is given in jest to any farmer known for bountiful harvests, or even for his enthusiasm in the field.

Although Pinker's story (1997:499) is not inconsistent with this prediction, our hypothesis predicts that even when skilled individuals confer no *tangible* benefits or services they will continue to be attractive because tangible benefits and services are secondary to the main goal of acquiring information.

Several psychological studies have demonstrated a correlation between skill and companion desirability. Gross & Johnson (1984) measured performance in 12 athletic skills (including running, swimming, basketball, and soccer abilities), and preferences for work and playmates. Each individual received a Lickert performance and preference score from his classmates. For 69 boys (ages 9 to 13), their performance scores in 9 of 12 skill areas revealed a significant positive correlation with the preference scores ($p < 0.05$); while among 39 girls, their performance in 7 of 12 skills showed a significant positive correlation.

In a similar investigation, Thomas and Chissom (1973) tested 172 male 6th-graders using both a sociometric instrument that asks subjects general questions about their selection of potential companions, and four athletic skill measures—specifically, the basketball wall pass, the standing broad jump, the softball throw, and the shuttle run. When they split the study population into 'highly desirable' (top 25% on the sociometric instrument) and 'highly undesirable' (bottom 25%) subgroups, their results showed that the first group had significantly higher scores than the second in the various skill

domains.[24] Based on these skills researchers were able to predict the desirable subjects 77% of the time, and undesirable 70% of the time (also see Moore & Falls 1970).

In *The adolescent society,* Coleman (1961:148) found that the good athlete-scholar (i.e. who excelled at both athletics and scholastics) far outdistanced all others in the scores given by classmates in such categories as (1) wanting to be friends with and be like, (2) identify as a member of the leading crowd, (3) number of friends, (4) popularity with the girls.

Dominant individuals are less attractive. This is a corollary of the preceding prediction. Though 'dominant' individuals may elicit deference from subordinates, these will not do so because they *want* to, but because they fear the consequences of doing otherwise. In other words, they will have *dominant* rather than prestige status.

Prestigious occupations will tend to be those which require more knowledge/skill. Although other factors can affect the status of an occupation, we claim that, in a meritocratic society, in which individuals have more opportunities to choose their occupation than in other societies (the American middle class), knowledge/skill will explain most of the variance in occupational prestige.

Davis and Moore's (Davis & Moore 1945) much-discussed theory of occupational prestige states that an occupation's contribution to the vital functions of a society (its

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[24] Note that rather than use labels such as 'desirable and 'undesirable' they actually called the two groups 'high status' and 'low status', but, as they didn't actually investigate patterns of deference, privilege, or of the flow of material or other rewards, it doesn't qualify as 'status' according to our definitions.

'functionality') explains its prestige. But one cannot really use 'objective' measures of functionality to test this hypothesis, because prestige results from the deference that people give, so the only measure of functionality that matters is the one in peoples' heads. Thus, to test whether people reward functionality with prestige, we must investigate people's own folk conceptions of functionality. Unfortunately, many studies that have tried to test the Davis-Moore theory have failed to do this (e.g. Wanner & Lewis 1978).

On the other hand, Lopreato & Lewis (1953) who, like us, make the point that "prestige is a *humanly attributed* reality [emphasis added]" (1953:302) did test what Land (1970) later called "cultural beliefs regarding stratification." 185 high-school students from two communities ranked 24 occupations on perceived level of functional importance, skill requirements, prestige, and rewards. They found that perceived level of skill, prestige, and rewards were highly correlated, but these same variables were not correlated with functional importance. Land (1970) reanalyzed the same data using path analysis and arrived at the same conclusion. Similarly, Grandjean & Bean (1975), using a perceptual measure of the functional importance of respondents own occupations, found that education explains 41% of the variance in respondents 'rewards' (a composite of income, ownership of consumer goods, and a self-rating of occupational prestige). However, adding *functional importance* explains only 1/5 of 1% of additional variance. In our view, 'education' usually acts as a proxy for either achievement or skill/knowledge. These data suggest that what is most salient to people is *not* how important a given occupation is to the survival of society, but rather how much skill/training its performance requires. Waste disposal, for example, is very important, but garbage collectors get little prestige. By the same token, the social utility of

astrophysicists and cosmologists is dubious, but they get much higher prestige than garbage collectors.

b) Predictions about imitation, biased transmission and influence

People preferentially copy skilled/successful individuals. As we pointed out earlier, skill correlates with prestige. But when researchers manipulate a potential model's apparent competence (his frequency of successes) in the absence of any other information about these individuals, subjects preferentially copy these more skilled or 'competent' models. This line of research builds from Miller & Dollard's preliminary discussion of prestige and imitation (1941). These authors observed/claimed that individuals preferentially copy prestigious people, but they defined prestigious people as particularly skilled or successful individuals in the immediate circumstances (those possessing a "high environmental competence"). To address this, both Rosenbaum & Tucker (1962) used an experimental setup in which pairs of subjects had to pick the winners of horse races. This work show that "model competence" (or the frequency of correct answers made by model), strongly affected the subject's propensity to imitate the model's choices, even when those answers are unconnected to the imitator's circumstances (environment).

Baron (1970), using a similar setup, provides a confirming result. In addition, numerous other studies have also shown how model success biases imitation (see Kelman 1958; Mausner 1954; Mausner & Bloch 1957; Greenfeld & Kuznicki 1975; Chalmers et. al. 1963).

Psychological research on imitation in children also confirms the importance of competence and age. In a study using second graders, Brody & Stoneman (1985) show

that age and competence interact to influence a model's quality. In the absence of other information, second graders preferentially imitate same-age models over younger (kindergarten) models. However, once further (experiential) information is available regarding the competence level of the model on a task (solving puzzles) unrelated to the child's current task (picking favorite foods) second graders prefer highly competent younger models over incompetent older models. In order of decreasing preference, second graders copy: same-age-high-competence, younger-high-competence, same-age-low-competence, younger-low-competence. However, when competence information on an *unrelated* task was available, it was a much stronger determinant of imitation than age. This shows a bias for both competence and age. Note also that Brody & Stoneman (1981) have shown that children will preferentially imitate older and same age models over younger models when the models are observed side-by-side in the favorite food game.

Prestigious individuals are influential, even beyond their domain of expertise. Like behavioral traits, the ideas, values and opinions of prestigious individuals are also likely to be imitated. A prestigious individual's success may result from his ideas, values and opinions just as much as from his behavior. These ideas may have general utility. That is, much of the information that leads to success in one domain will often be transferable to others. This is probably why acquiring skill in one domain (e.g. a martial art) is often touted as promoting success in many other areas. For example, problem-solving methods, goal-achieving strategies, ability to identify diminishing returns, eye-hand coordination, control over one's emotions, etc., are useful across several domains., Thus, the opinions and values of prestigious individuals will be attractive in domains other than their own,

when no domain expert is available. As the preceding study shows, children will use model competence in an unrelated task to weight the model's opinion in another task. In addition to the above, consider that figuring out which combinations of traits make someone successful is prohibitively difficult. As mentioned earlier, this will favor a general copying bias that indiscriminately absorbs most of the model's copiable traits, which also tends to make prestigious individuals generally influential. No competing theory makes this prediction.

We are not the first to observe that prestigious individuals are influential, and generally so. Writing of leadership, Gibb (1954:252) writes the following of what he calls "unsought leadership":

> ...the great artist does not have a group to lead in the sense that a military officer or even a union official has. But the influence of such a man in an interactional situation is undeniable (...) Our valuation of eminence, prestige, and status itself is such that a man will often be followed in an area quite beyond that in which he makes his contribution. He thus becomes a kind of 'projected' leader...

Such patterns are observed throughout the ethnographic record. When speaking of leadership and status among the Cubeo, an Amazonian horticultural group, Goldman (1979:155) writes, "He is the chairman of discussions and arbiter of disputes. He has no authority to order punishment, although his opinion carries weight" Among the Meriam, great turtle hunters are permitted to speak and are listened to more than others, despite the fact that their skill in hunting turtles give no direct indication of their skill in public affairs or politics (Smith and Bird 1999). Among the !Kung, Lee (1979: 343) observes that particularly skilled orators, arguers, ritual specialists and hunters "may speak out more than others [in group discussion], may be deferred to by other discussants, and one

gets the feeling that their opinions hold a bit more weight than the opinions of other discussants."

Ryckman et al. (1972) showed that prestigious individuals do significantly influence opinions. They sought to examine how a subject's locus of control ('internal' vs. 'external') interacted with the opinions of a prestigious person in subject attitude change. 'Externals' see circumstances outside of themselves such as luck, fate or powerful others, as decisively impacting their lives, while 'internals' see themselves 'in control' due to their skill and/or determination. Using a group of internals, externals, and control subjects selected with the standard I-E written test, the influence of two types of prestigious individuals was investigated. One prestigious individual was presented as an expert in student activism (the subject under discussion), while the other (the non-relevant condition) was introduced as an expert in social problems of the ancient Chinese Ming Dynasty. Similarly, using the topic of "national budget priorities", Ritchie and Phares (1969) obtained the same results with a 'leading economist vs. college sophomore' in the high vs. low status manipulation.

These results suggest that for externals, which comprise 80% of the population, the opinions of prestigious individuals significantly affected their own, regardless of the relevance of the prestigious individual's expertise. Both relevant and irrelevant conditions showed significant effects ($p < 0.001$) relative to the control, but were not significant relative to each other. In contrast, neither the relevant nor the irrelevant expert had any effect on the opinions of internals. The internals seemed to recognize that the experiment was designed to manipulate their opinions and, as has been demonstrated elsewhere, internals are highly sensitive to such manipulations and often react strongly against them.

From our perspective, then, this seeming counterevidence for internals may be an artifact of the experiment.

Prestigious individuals are memorable. What prestigious individuals do and say should be remembered better than what others do and say. Because prestigious individuals typically have valuable information, copiers should have above-average retention of their behaviors and speech-acts.

A psychological study done on the effect of a speaker's status on listener's memory (Holtgraves et al. 1989) provides some support for our claim. In this study subjects recalled better the conversational contributions ('targets') of an individual when they were told he was 'the boss'. Their results are as follows:

[Table 2 about here]

In the *high status* condition, subjects were told that 'Robert' was 'the boss'. In the *equal status* condition both were identified as 'co-executives'. *Before* and *after* refer to whether status information was provided prior or subsequently to the reading task (a card with a dialogue printed on it that they were given to read).[25] Contrary to the researchers' initial hypotheses, but in accordance with the predictions of the information-goods theory, high status showed a retention effect (ANOVA $F(,16)=4.32$, $p<0.054$) in the 'before' condition, but not in the after condition.

Organizational or institutional positions such as 'boss' often contain elements of both prestige and dominance. Bosses 'dominate' with their ability to hire and fire,

influence salary, and write fitness reports—i.e. they have real control over rewards and punishments, analogous to alpha males in non-human primate dominance hierarchies. For this reason, we believe the stimulus of *one's own* boss fires the 'dominance hierarchy' psychology, with accompanying ethological displays in both bosses and subordinates (see Fessler, 1999). On the other hand, in meritocratic institutions individuals may also think that bosses have acquired their position through merit and achievement. We accept Holtgraves *et al.*'s (1989) status manipulation as one of prestige rather than dominance because 'the bos' was not the experimental subject's boss, and therefore has no control over rewards and punishments *vis-a-vis* the subject. Thus, the only effect left is the presumed inference that he became *someone's* boss due to his skills—a social marker of prestige.

Prestigious individuals are preferentially imitated. Those with skill-derived status (even when their skills have not been directly evaluated by the copier) should be imitated because of the superior information they typically possess. However, the same should not be true for dominant individuals, for there is no necessary correlation between success in antagonistic combat and other forms of success. One may stipulate that the extent to which success in such combats depends on imitable qualities (strategy, morale, etc.) individuals should copy these qualities, but only assuming that they wish to become dominant themselves. Alternatively, one could imagine that if nonconformity with the dominant individual's behavior is taken by the latter as a challenge, individuals should

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[25] Holtgraves *et al.* (1989) tested both recall and recognition using both observation of live action and

imitate, *but only in the presence of the dominant individual, for the purposes of pacifying him.* That is, since the function here is to appease and not to acquire better information, such imitation should have little stability. Modeled behaviors should be more reliably expressed in the absence of the original model when this model was a prestigious rather than a dominant source (we need studies that evaluate the stability of copying with prestigious *vs.* dominant individuals in order to test for this expected contrast). No competing theory of status makes this prediction.

In his massive review of the literature on the *Diffusion of Innovations* (also the title of his latest book), Rogers (1995) argues that the diffusion of new ideas, technologies and practices is strongly influenced by "local opinion leaders." Compiling findings from many diffusion studies Rogers describes these individuals as: (1) locally high in social status (e.g. high status within the village or village cluster); (2) well respected (indicating prestige rather than dominance status); (3) widely connected; and (4) effective social models for others. This suggests that individuals will preferentially imitate other people's ideas and behaviors even in domains or on topics that they know little about.

Labov (1980, 1972) has shown that dialect change is led by individuals who have high status within their local community. In Philadelphia, upper-class-working women pioneer novel sound changes, which then spread through the local social strata. In Martha's Vineyard, most folks are not aware of the dialect differences between themselves and mainlanders. Yet, they seem to have granted considerable social status to

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reading tasks.

local fishermen—who exemplify the local spirit of resistance and tradition—which has led to inadvertent copying of these high status individuals.

Using a task which involved guiding a marble through a maze, Bauer et. al. (1983) showed that female undergraduates preferentially copy the 'style' of a prestigious model over a lower status model, where the time taken to navigate the maze is the dependent measure. In the 'high-prestige' condition, subjects first watched a "poised, professionally-attired, 23-yr.-old female college student" navigate the maze, who was introduced as a Ph.D. and the technical advisor to the experimenter on perceptual motor learning. In the 'low-prestige condition', subjects observed a "female college student navigate the maze, who behaved and dressed in an immature, adolescent-like fashion," and who was described (but not introduced) as a friend of the younger sister of the experimenter. A control experiment, with no model, was also performed. Both models performed the task twice in front of the subject, and both took about 70 seconds to perform the task, but the prestigious models displayed a 'slow and deliberate' style. Subjects seemed to copy this style, and they performed much more slowly (in seconds to completion) than subjects did in the control or with the low-prestige model. Mean times to completion are 102, 48, and 44 seconds for the high-prestige, low-prestige and no-model conditions, respectively. The difference between the high-prestige and the control conditions was highly significant ($p < 0.001$). The work confirms previous research, which demonstrates that people preferentially copy more prestigious models (Lefkowitz, Blake & Mouton 1955; Harvey & Rutherford 1960; Bandura & Kupers 1964).

Studies using a jaywalking manipulation have consistently found that people preferentially copy the behavior of high status models. In these experiments, 'high status'

models wear business suits while 'low status' models appear disheveled and impoverished. In a meta-analysis of seven studies on jaywalking, Mullen et. al. (1990) show that a high status, obedient model increases the compliance of others to the 'no jaywalking' rule, while low status, obedient models had no significant effect. Similarly, the presence of a disobedient, high status model also significantly decreases jaywalking compliance, though not as strongly as when they are obedient. (Interestingly, the presence of disobedient, low status models also significantly diminishes compliance, and the effect is somewhat stronger than the disobedience in the high status condition.)

c) Predictions about Ethological Patterns

Prestigious individuals will be gazed at more. Because people 'want' to copy more prestigious individuals, they will look at them more often and for longer stretches of time. No competing theory of prestige makes this prediction.

In the Bauer *et. al.'s* (1983) maze navigation task describe above, the researchers also recorded the amount of time the subject spent watching each of the models (termed 'visual fixation'). Unfortunately, Bauer *et. al.* do not provide the data or the average times spent watching each model, but they do specify that the high-prestige model was watched significantly more than the low-prestige model ($p < 0.001$ for the main effect using ANOVA). They also note a correlation between 'time to completion' of the maze (the modeled behavior) and time spent staring a the model ($r = 0.24, p < 0.05$). Thus, those who watch the model longer are also more likely to acquire his behavior.[26]

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[26] Since the two models and all of the subjects were uniformly female, the possibility that one model received more attention because she was more attractive has been controlled for.

Absent other information, individuals should infer prestige status from ethology. In the absence of personal knowledge and past experience, people should be able to pick out prestigious members of a social group simply by observing the ethological displays of group members. For example, when speaking in groups, prestigious individual frequently 'get the floor' (it's always their turn to speak if they want to), they are not interrupted or spoken over, and they can pause without someone else bursting in. Lower status people pay careful attention and listen with patience. Efforts to disagree with prestigious individuals occur less frequently, and are always couched in deferential tones and speech. Furthermore, and to distinguish from dominant individuals, prestigious individuals should receive sustained attention from up close.

Clients, rather than prestigious individuals, will be responsible for most proximity maintenance. Proximity enables the copying of socially transmissible behaviors, and copiers have the greater incentive for establishing contact for two reasons. First, the costs of maintaining proximity are smaller for each imitator; a model would have to be chasing around many imitators, but each imitator needs to chase only one model. Second, it is the models who possess an *intrinsically* valuable good. That is, their skills are valuable whether or not access to their imitation is sold.

Coleman (1961:99), in a study of adolescent culture, found that boys and girls exhibited high consensus in identifying the people they wanted to be with (category 3 in the table below) and be like (category 4). In his study, a score of 100 corresponds to completely random choices, while a score of one indicates total consensus.

[Table 3 about here]

Some unusual funerary rites in the ethnographic record attest to the powerful psychological desire to maintain proximity and contact with prestigious people. The Mapuche traditionally smoked the dead bodies of prestigious/influential men and kept them in the house for up to a year. Mapuche felt that by keeping the body in the house they could maintain 'contact' with the *am* (roughly the 'soul' or 'spirit'; Titiev 1951: p.107). Similar practices have been noted among the Inca and in Panama (Cooper 1946, p.735).

The ethologies and other behaviors elicited by dominant and prestigious individuals will be different. These are enumerated as follows:

1) Prestigious individuals get direct and plentiful attention, dominant individuals get furtive glances.
2) In prestige—but not in dominance—hierarchies, lower-ranked individuals will seek close contact with the higher-ups.
3) Prestigious—but not dominant—individuals will be preferentially imitated.
4) Prestigious individuals receive more freely-conferred gifts (and other tokens) than dominant individuals.

A few studies in the literature on children's dominance patterns has investigated questions that bear directly on our predictions. For example, Hold (1976) sought to explore the relationship between dominance and attention, but also looked at imitation and several other pertinent variables; Abramovitch (1976) tested the relationship between dominance and proximity, on the one hand, and dominance and attention, on the other; and Russon & Waite (1991) tested for a relationship between dominance rank and imitation.

In Hold's (1976) ethological study of preschooler hierarchy, attention is a proxy for rank. Hold argues (1976:179) that attention structure is "the best framework for analyzing social rank as it takes into account all leadership styles." But we wish to distinguish between the different types of 'leadership styles', and attention can happen in different ways. For example, in dominance hierarchies, the alpha attracts a lot of attention when he makes another individual the victim, or is challenged by an underling; by attending closely to such interactions, individuals obtain valuable information about changes in the dominance hierarchy (Joan Silk, personal communication). But at other times, the dominant individual gets mostly furtive glances, from a safe distance. Dominant alphas will not absorb attention in long stares from *up close*. On the contrary, subordinates also tend to turn their whole bodies submissively *away* from such higher-ups, to avoid any appearance of confrontation. The only time subordinates should give sustained, direct attention to dominants is during aggressive encounters between dominants and *other* animals. In prestige hierarchies, however, individuals should give sustained and *generalized* attention to high-status individuals, rather than narrowly restricting themselves to one category of behavior, and they should keep close proximity with the high status individual as much as possible.

We believe Hold's attention measure corresponds to prestige-, rather than dominance-induced attention. In her measure, each child is sampled every five minutes and the investigator records whether the child is "the center of attention". For Hold, this means, specifically, "whether he was being looked at by three or more children simultaneously. At least three children had to be standing within one meter of the child under observation, and their bodies and heads had to be oriented in the direction of the

subject child" (Hold 1976:180). The probability that three individuals will simultaneously find themselves watching a dominant individual, with their bodies oriented toward him, *within a meter* of the dominant individual seems rather low. The corresponding probability for a highly prestigious individual is much better. By measuring direct, sustained observation of a focal individual by three or more individuals in close proximity, Hold has captured three key elements of prestige, thus, we believe the hierarchy which emerges from Hold's operationalization is a prestige—and not a dominance—hierarchy.[27] If our theory is correct, Hold should find no positive correlation between agonism and rank. The total frequencies of several behaviors for a class of 5-6-yr-olds are listed below (Hold 1976:183):

[Table 4 about here]

Hold's results support our interpretation of her methods, which we believe tap prestige-derived status. First, those receiving more attention also get more 'gifts', so it does seem to be a status ranking—a hierarchy of benefits/deference. Second, Hold found no relationship between aggression and attentional rank, which is consistent with a prestige hierarchy because there is no reason why higher skill should make individuals more aggressive (to the contrary, if they want to attract clients), but not consistent with a dominance hierarchy where status is gained through agression. Finally, the child ranked

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[27] In some primate species (like baboons), subordinates will groom dominant individuals, perhaps to appease them and avoid their aggressions. Ethologically, this behavior could be confused with the deference and proximity associated with prestige hierarchies, until the entire interaction is taken into account. Subordinate groomers do not maintain proximity to the dominant after the grooming; they do not

second under 'center of attention' is *less aggressive* than both the 1st and the 3rd ranked child. Again this is consistent with a prestige hierarchy because the 2nd-ranked may be competing for clients by being 'nicer', but it is not consistent with a dominance hierarchy where rank is maintained by agonism. In fact, it has been found that in dominance hierarchies the challenger or second-ranking individual is often more frequently aggressive than the leader (Masters 1981, Montagner 1978). Thus, in line with our prediction, it appears that Hold's methodology has picked out a prestige hierarchy.[28]

A comparison between Hold's 'center of attention' variable, which stands as an indirect measure of the prestige ranking, and her other behavioral observations confirms several of our predictions. First, H4, the most prestigious individual, is also the *most imitated*, while the least prestigious individuals are hardly ever imitated. In fact, H4 is imitated more than twice as often as the next child in the prestige hieratchy. Second, H4 also received the *most presents*. Note, the second most frequent gift receiver was the most

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stare at the dominant except for the purposes of grooming; and they do not orient themselves toward the dominant, except in whatever positions are necessary for grooming.

[28] In the sample of 3-yr-olds Hold *did* find a correlation between attentional rank and aggression, and speculates that this is because "younger children are still in the process of learning to behave socially" (1976:185). It is quite possible that prestige hierarchies only emerge when a sufficient number of children learn that the dominance strategy is too costly (because adults will punish, etc.). Consistent with this interpretation is the fact that the frequency of aggressive behaviors was higher in the younger children That is, the dominance hierarchy has probably not stabilized because enough morphological differentiation has not yet occurred. Alternatively, the prestige psychology emerges later, developmentally. If prestige hierarchies do not emerge until about 5 yrs. of age (i.e. ontogeny recapitulates phylogeny), then their absence in 3-yr-olds would make Hold's attention measure, however coarsely, pick up dominance relationships, explaining the correlation she got. This is especially true if at this age children have not yet lived long enough to find out how much bullying they personally can typically get away with, which means

frequent aggressor, suggesting that perhaps he's second because the other kids fear him (he has dominance status). Third, the two most prestigious individuals are virtually tied for the *most obeyed*—the most influential children are the most prestigious. Unfortunately, we don't know the number of efforts to influence made by each child. Perhaps the second most prestigious child made many more attempts to influence others than H4. Fourth, item 7 shows that the most prestigious individuals are preferred interactants—much more preferred than the low prestige kids. Fifth, H4 is only the fourth most common aggressor, but he appears friendly, and is essentially the only 'protector'. Only a prestigious individual would have the influence to protect. The higher frequencies of friendly behaviors in the lower-ranked ought to be expected if they are deferring to him. The one discrepant finding appears to be that H4 is the second most avoided child. Hold did not weigh this result by frequency of interaction, so it is possibly a confound, given that more interactions take place with this child

Our theory predicts that prestige will correlate with a number of other observable variables. Using Hold's center-of-attention measure as an indirect measure of prestige, we predict that 'prestige' will correlate with 'being imitated', 'being obeyed', 'receiving presents' (deference), and interactional preference ('Is told, shown, asked'). Our analysis of Hold's data confirm all these predictions: Table 5, below, shows that each of these is strongly correlated with the 'center of attention' measure and statistically significant (highlighted in bold).

[Table 5 about here]

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they haven't decided they are subordinates and as a result stare more at fight-winners than older

Also note that several other findings from this analysis are consistent with our basic story. First, prestige does not correlate with 'aggressor,' but does correlate with 'protector.' Prestigious individuals do not need to be 'aggressors' (that's a dominance strategy), but they do possess the social influence required to 'protect' lower status interactants. Second, prestige is uncorrelated with 'imitator.' The more prestige (i.e. skill-derived status) you have, the fewer skilled models will be available for imitation. Third, prestige is either uncorrelated or negatively correlated, with 'retreater' and 'onlooker'. More prestige means you do not need to retreat; your status leads others to defer to you and this includes restraining their aggression. And finally, you are more often a participant in interactions, because you are chosen more often as an interactant than less prestigious individuals.

Using subjects between ages three to six, Abramovitch's study of dominance interactions provides a contrasting case to Hold's. Abramovitch (1976:158) describes her operationalization of rank as follows:

> the number of individuals with whom fights were won and lost...Rank determinants were made on the basis of 'property fights', struggles to gain or to retain an object (...) A property fight was defined as an agonistic or quasi-agonistic encounter in which two individuals actively 'tussled' or fought over the same object (cf. McGrew 1972). The child who obtained or retained the object was scored as the winner...

We believe this is more likely to pick out a dominance rather than a prestige hierarchy. With regard to attention, Abramovitch throughout the paper claims to have recorded 'glances', and in her introduction notes that subordinates in dominance hierarchies attend to the 'leader' but avoid face-to-face contact and practice gaze aversion

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subordinates would.

in order to avoid staring (*ibid.*:154). Together, these facts suggest that she was not recording prolonged staring, even though there is no explicit statement of the operationalization of 'glances' in the paper. With regard to proximity, she states (*ibid.*:156): "Proximity was investigated by analyzing the spacing between individuals of various ranks rather than by looking at actual amounts of space held by particular individuals." This measure then allows her to see whether subordinates are *avoiding* those of higher rank. Abramovitch found that high-ranked individuals got more glances from, and were avoided by, subordinates, which contrasts nicely with Hold's data—and supports our predictions.

Our theory states that those with skill-derived status should be imitated because they probably possess superior information, but the same should *not* be true of dominant individuals, for there is no necessary correlation between success in agonistic encounters and other forms of success. One may stipulate that the extent to which success in such combats depends on imitable qualities (strategy, morale, etc.) individuals should copy these when dominance is an option that one's individual endowment, and the environment, make both possible and palatable (e.g. inside the mob, in street gangs, in prisons, etc.). But we should not expect a *general* copying bias towards dominant individuals. Also, to the degree that nonconformity with the dominant individual's behavior is taken by the latter as a challenge, individuals should imitate, *but only in the presence of the dominant individual, and only for the purposes of pacifying him.* Such imitation should be non-stable, and should degrade quickly in the absence of the dominant individual, whereas the behaviors copied from prestigious individuals should

have much greater stability. No competing theory of status that we know of makes these predictions.

Using 11 to 16 month-olds, Russon & Waite (1991), in addition to conflicts over property, used *aggression*, *assertion* and *submission* to determine status rank, although the frequency of property conflicts account for a 5/8 of the diagnostic behaviors. This hierarchy is therefore comparable to Abramovitch's (1976) and, if anything, is an even better measure of dominance. Their results failed to show any significant tendency to prefer higher ranked models in imitation (1991:68). Moreover, the evidence shows that the children were very seldom copying things that they didn't already know and could easily perform. This suggests to the authors that, in this case, imitation was not for the purposes of knowledge acquisition, but for the purposes of facilitating task-coordination with others and thus minimizing conflict. Although not for the same reasons, this should also happen in prestige hierarchies, since coordination with the prestigious individual's activity tastes facilitates proximity.

Prestige rankings are socially transmitted. Clients rely more on the judgments of *others* to decide who is prestigious (and, by extension, skilled/knowledgeable) when information about the relative merits of individuals is not readily available or is very hard to collect. If the 'judgments of others' are coded in some meaningful prestige-marker, such as a medal, a university degree, a higher position in a meritocratic institution, clients should use these too. No competing theory makes this prediction.

There must be some individual medical doctors who are despised by all who know them. Nevertheless, doctors in general enjoy high prestige. Thus, if all one knows

about a person is that she is a doctor, and one does not enjoy a higher-prestige occupation, deference is in order. Why? Because if the person is a doctor it is very probable that she is prestigious (even if some individual doctors are not), and thus the information about her occupation contains information about the probable judgements others have already made of her. The 'Status Characteristics' branch of the 'Expectation States' literature has repeatedly found that in informal problem solving groups, people's occupations in the 'real world' greatly affects the status distribution inside the task-group. More importantly, the status differences seem "'instantaneously' created instead of evolving out of the face-to-face interaction among the group members," which means people are relying on the markers that stand for the judgments of others, rather than on personal evaluations (see Berger et. al. 1980 for a review).

Implicit evidence for the social transmission of prestige ranking emerges in status manipulations used throughout the psychological literature. Often, in these laboratory studies, subjects receive information from the researchers (i.e. socially transmitted, often false, information) about the relative status of participants. Among the studies discussed herein, researchers make status distinction using the following contrasts: 'graduate students' *vs.* 'high school students' (Sistrunk 1971), 'leading economist' *vs.* 'college sophomore' (Ritchie & Phares 1969), 'the boss' *vs.* 'coworker' (Holtgraves et. al. 1989), and 'Ph.D.' *vs.* 'younger sister of experimenter' (Bauer et. a. 1983). In each case, subjects demonstrated the expected prestige effect despite the fact that their only knowledge of the person's 'status' was transmitted socially from the researchers—that is, the subjects had no independent observational support for the researchers' claims about status, yet they apparently acquired and used this social information.

In what is perhaps the finest ethnography of prestige in the literature, Hatch (1992) found that New Zealand farmers in small rural communities rely on the assessments of other farmers, as well as on individual judgment, to rank farmers. Notably, skill is the most important factor in individual assessments of rank. Most importantly for this prediction, *non*-farmers rely almost entirely on the judgments of farmers, which suggests that the reliance on social learning increases when individual evaluations become more difficult. In this case, the division of labor leaves non-farmers without the expertise to evaluate farming skill, so they rely entirely on social information. Baron et. al. (1996) has demonstrated the same effect in the laboratory: as problem difficulty increases people rely even more heavily on socially-transmitted information.

6. CONCLUSION

We have presented a theory for the evolution of prestige and prestige-biased cultural transmission. We have argued that prestige, in contrast to dominance, is a second avenue to status and status-competition in humans, and it has resulted from the combination of an intense group social life and imitative capacities. Our model of the evolutionary emergence of prestige-related psychology proposes that natural selection responded to opportunities created by the evolution of cultural (imitative) capacities in our lineage, progressively refining our imitative capacities and biases in order to better extract information from the social world. These imitative capacities reduce the costs of acquiring adaptive behaviors *via* cultural transmission. When model selection capacities are biased in such a way that imitators tend to pick better-than-average models, and when much of the information about model quality is obtained from others *via* imitation, the

cost savings of imitation are even greater. We have argued further that when the imitator becomes a valuable interactant for the chosen model, this will facilitate proximity and improve the richness and accuracy of the imitative process. This is a key point, for it explains whence the patterns of deference (including the ethological patterns) which result in the asymmetries that have so interested anthropologists and sociologists who have sought to explain the phenomenon of prestige.

From this theory, we have generated a number of empirically-testable predictions and have begun to review evidence from throughout the social sciences to substantiate them. In the future, we plan to further test this theory by exploring its explanatory power and implications for understanding such things as the behavior and social structure of foraging populations, the importance of hunting and related behaviors to prestige in foraging societies (including a better understanding of the social-learning processes involved), the emotions involved in prestige and dominance hierarchies, the evolution of social hierarchy (from the prestige economies of 'big men' to the prestige-goods of chiefdoms), the rise and behavior of leaders in institutions and organizations, and the evolution of social classes and ethnic groups. Our hope is that readers find this paper at least provocative, if not persuasive, and that it will generate new lines of research that cross-cut the social sciences.

Characteristics	a	b
Being an athletic star	1	1
Being in the leading crowd	2	2
Leader in extra-curricular activities	3	4
Having a nice car	4	3
Coming from the right family	5	6
High grades, honor roll	6	5

Table 1. Coleman's High School Study

Conditions	High Status	Equal Status
Targets recalled in before condition	37.3%	29.5%
Targets recalled in after condition	33.1%	33.1%

Table 2. Target Recall from Holtgraves et. al. (1990)

Characteristics	Boys	girls
1.Friends	46.5	54.6
2. want to be friends with	27.9	10.5
3.Be like	11.5	5.4
4.Leading crowd	4.3	1.8

Table 3. Coleman's survey of high school boys and girls

Boy	H4	H3	H1	H9	H7	H5	H2
1-Center of attention	17	13	9	6	3	2	2
2-Aggressor	16	12	17	35	10	20	9
3-Protector	13	2	3	0	0	2	0
4-Is imitated	55	21	23	19	6	6	20
5-Is obeyed	18	19	10	7	0	2	6
6-Present receiver	52	23	29	38	10	15	11
7-Is told, shown, asked	53	51	41	16	4	16	20
8-Is avoided	8	5	4	10	1	2	1
9-Imitator	10	13	37	7	17	18	16
10-Friendly child	9	12	15	18	18	3	8
11-Seeking reassurance	27	24	28	38	34	16	33
12-Retreater	1	3	4	4	5	4	3
13-Onlooker	17	30	41	13	34	58	50

Table 4. Hold's Ethological Data

Observed Behavior Category	Correlation with 'Center of Attention' measure	Significance *p-value*
2-Aggressor	-0.016	0.9744
3-Protector	0.795	0.03
4-Is imitated	**0.841**	**0.0142**
5-Is obeyed	**0.930**	**0.0009**
6-Present receiver	**0.794**	**0.0305**
7-Is told, shown, asked	**0.912**	**0.0021**
8-Is avoided	0.615	0.152
9-Imitator	-0.128	0.7975
10-Friendly child	0.058	0.9071
11-Seeking reassurance	-0.135	0.7853
12-Retreater	-0.745	0.055
13-Onlooker	-0.625	0.1425

Table 5. Correlations of Hold's data

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