"You Have Heard… But I Tell You…":

A Test of the Adaptive Significance of Moral Evolution

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Darwin suggested that human cultures have tended to progress from a primitive state of morality that only applies to one's own social group, to a broader view that accepts all humans, and perhaps even nonhuman organisms, as morally considerable (Darwin 1871, ch.4). What are the causes of this or other temporal changes in a culture's typical moral attitudes? In this paper I illustrate how a hypothesis rooted in Darwin's own ideas might contribute to an understanding of such moral evolution.

Morality originated, according to Darwin, as within-group cooperation arising in the context of between-group competition. This cooperation was, and by this theory still is, primarily maintained by the approval and disapproval of other people. This theory is still current, and has been recast and extended by Alexander (1979; 1987; 1989; 1990; 1992). Two of the points emphasized in the newer formulation may provide a way of analyzing the causes of temporal change in a culture's typical moral emphases. First, social selection tends to be the overwhelming determinant of which human behaviors are adaptive. Social selection is that subset of natural selection where the agent or source of selection is other humans. Other people, then, have the greatest effect on individual fitness. Second, social environments (the array of effects that other people are likely to have on an individual's fitness) vary widely from culture to

culture, and within a culture over time. These two realizations together imply that certain changes in a society can lead to shifts in what kinds of behavior, and therefore attitudes, tend to be adaptive (i.e., productive of individual fitness).

Moral rules can bring older strategies, or patterns of behavior, up to date, thereby facilitating adaptive behavior in a social milieu that changes over time (Lahti 2003). Certain species-wide fundamental dispositions appear to have characterized human sociality for tens of thousands of years or more, such as dedication to kin and honesty in reciprocal interactions. These arguably form the bedrock (historically, not necessarily theoretically) of morality's content, and these dispositions still aid us greatly. However, a rapidly changing social environment may often require alteration or transformation of such basic strategies if behavior is to stay adaptive. Moral norms may provide a valuable mechanism for tracking the social environment. Although they are conservative, typical or average moral emphases and the relative importance of particular rules, change over time and differ across human groups. This moral variation might be explainable; much of it might correlate with variation in social environments.

Here I compare the social environments of two periods in the history of a culture (ancient Israel), and explain how a particular moral reform in the latter period (that of Jesus) may have been an adaptive attitude adjustment given the changes in social environment that had been occurring. If changes in moral norms track changes in adaptive behavior, an effective moralist for a given community should emphasize strategies that are adaptive for a typical member of that community in the current social environment, but at variance with older dispositions. Such moral education would encourage deliberation, and help adherents to overcome or alter older dispositions in order to act appropriately in a new social context (Lahti 2003). Specifically, the

moral teachings of Jesus should realign or modify earlier Jewish moral prescriptions, encouraging attitudes or actions expected to be more adaptive for a typical hearer in Palestine around the turn of the eras, than they would have been earlier, say 1500-400 BC. Moreover, the teachings should emphasize the novel prescriptions relative to ones that were currently conventional. I show that these expectations are met, using Jesus' teachings as set out in the Sermon on the Mount (Mt v-vii).

Although I treat attributions to Jesus as authentic here, issues of authenticity and authorship are not relevant to my argument; it is sufficient that the statements originated in first century Judea, which is not disputed by scholars (Neirynck 1993). These teachings exemplify moral emphases that differ from those prevalent in previous centuries in the same culture (next section). Moreover, the sociopolitical environment of the region and the time period is well known (Levine 1998), which permits identification of those interpersonal strategies that may have been changing in adaptive value during the period leading up to the teachings.

The social environment of the Jews between roughly 1500 to 400 BC is an appropriate baseline for comparison with the reforms of Jesus, because distinctive features of their moral system were fixed during this period. This is shown by (1) the content of the Hebrew Bible; (2) the fact that this content is given special authority in religious writings of later Jews (e.g., in the New Testament (Wilson 1989), the Dead Sea Scrolls (Vermes 1997), and the Midrashim (Epstein 1959)); and (3) the influence this period had and still has on the rituals and self-perception of the Jewish people (Ben-Sasson 1976; Dearman 1992).

The Sermon on the Mount is the longest continuous collection of moral teachings attributed to Jesus, and is generally seen as encapsulating them (Richardson 1958; Stott 1978; Guelich 1993; France 1994). "All the articles of our religion, all the canons of our church, all the

injunctions of our princes, all the homilies of our fathers, all the body of divinity, is in these

three chapters, in this one Sermon on the Mount" (John Donne, cited by Stott (1978)). The

teachings are also seen as a departure from earlier conceptions of certain moral norms in the

culture. This argument will be developed more fully later.

In this paper I reduce moral statements to evolutionary terms. Such reduction often

distorts or destroys the import of statements in the consciousnesses of the hearers and readers for

whom the statements were intended. The most essential parts of a theological or devotional

exposition of a statement can be lost. My purpose is to bring into relief only those aspects that

are potentially relevant to biological function, i.e., human reproductive success. Reducing moral

or religious language to biological language is an experimental exercise, performed to facilitate

hypothesis generation and testing. This paper is not intended as a theological revision of the

Sermon or an attempt to identify the intentions or knowledge of either Jesus or the gospel writer.

I use "morality" and "morals" in this paper in the restricted sense of generalized rules for

attitudes and behavior, except that I include rules that have been abandoned or considered less

relevant in later periods of history. Commonly in writings on morality, the concept is applied

preferentially to those rules that rise above, or are robust to, the effects of history or particulars

of social environment. This search for a "perennial morality" is worthwhile, but my intention

here is precisely to investigate temporal *variability* in moral customs or emphases.

English quotations from the Bible are from the 1971 edition of the Revised Standard

Version unless otherwise indicated.

Relations Between Social Environment and Morality in Pre-Hellenistic Israel

Two aspects of ancient Hebrew culture are of paramount importance in understanding the relationship between their social environment and their moral code. First, they were monotheistic. Yahweh was the sole God, in full control of the origin and destiny of every individual human and indeed of the whole world (Job; Ps civ), as well as being the author and enforcer of all laws (Ex xix-xx; Ps cxix). Their monotheism renders plausible an assumption that God's general commands as represented in the Torah approximate the morals generally accepted by the ancient Hebrews. The Hebrew religious system officially permitted no other source of values.

Second, the ancient Hebrews saw themselves as ethnically homogeneous. Jacob, Abraham's grandson, was renamed Israel, and all Hebrews who established the nation of Israel claimed descent from him. (The later term "Jew" originally referred to the southern of the two kingdoms, largely the tribe of Judah, after the civil war (2K xvi.6).) The Hebrew people may actually have been a conglomerate of various Semitic peoples (Knight 1993), but in the Torah the Hebrews are distinguished from every other people with whom they come into contact (e.g., Gen xliii.32; Ex i.19; 1Sam xiv.11). The people of Israel are called children of Abraham in several places. Although there are other peoples said to have descended from Abraham, those considered God's people and with whom he made suzerainty or vassalage covenants (Youngblood 1971), are the children of Israel (God chooses Isaac over Ishmael (Gen xvii.20-21) and Jacob over Esau (Gen xxviii)). To be a child of Israel was to enjoy a special status with the one true God. Likewise, the moral laws given to the Hebrew people were to be considered in the context of a special covenant with God (Goodman 1998).

Monotheism and ethnic homogeneity were intrinsically complementary. However, the effect of this combination in the broader polytheistic environment was an unrelenting threat to Hebrew survival as a people throughout their early history. One Judaic scholar writes, "As bearers of the only pre-Christian monotheistic tradition, Jews had often faced extinction by more powerful polytheistic peoples" (Greenspoon 1998, 422). The (at least official) exclusive monotheism of the Hebrew people is thought to have been their most significant point of contention with neighboring peoples, whose polytheistic religious systems were more accommodating to outside deities (Goodman 1998). The Hebrew Bible is filled with accounts of clashes that endanger Hebrew religious identity because of the possibility of idolatry (the worship of gods besides Yahweh). Religious and ethnic considerations were closely linked, such that a threat to either was viewed as a threat to the integrity of the people as a whole. Prospects of their being scattered, mixing with other peoples, or failing to produce offspring were disturbing enough concepts to be the frequently threatened punishments for violating the established covenant with God (e.g., Gen xi; Lev xxvi.33; Deut iv.27; 1K xiv.15; 2Chr xviii.16; Jer ix.16; Ez v.10; Zech i.21). Ethnic and kin disintegration, together with reproductive failure, was the most widespread curse or ultimate punishment in the Hebrew Bible. Moreover, the threat was real; the Hebrews were subjugated to the Egyptians, Assyrians, Babylonians, Ptolemies, Seleucids, and finally Romans, and for only brief periods of their history were allowed unmolested self-rule, much less expansion (Rajak 1998; Greenspoon 1998).

If moral rules produce adaptive attitude adjustments, one would expect the norms embraced by the Hebrew community to counteract the particular threats they faced. One way in which norms in ancient Israel may have contributed to a preservation of ethnic and religious identity was through moral restrictions on relationships with those outside of the community.

Although there are rules even between Hebrew groups (e.g., Gen xlix.7; Lev xxi, Num xxxvi), the rules governing interaction with non-Hebrews are particularly striking and frequent. The reason given in the scriptures for the complete removal of the peoples in the Promised Land upon the Hebrews' arrival with Moses is "that you may not be mixed with these nations left here among you, or make mention of the names of their gods, or swear by them, or serve them, or bow down yourselves to them" (Josh xxiii.7). In later history ethnic mixing following captivity caused the prophet Ezra to pull out his hair in disgust (Ezra ix.2). Hosea ridiculed the tribe of Ephraim for failing to realize that mixing with foreigners saps its strength (Hos vii.8-9). A significant example of this moral emphasis concerns the treatment of foreign women. While Israel was still fighting to conquer a territory for themselves after their return from captivity in Egypt, all women were to be killed in the areas to be assimilated, although women from more distant areas could be taken as wives, presumably to speed the initial process of repopulating the region (Deut xx-xxi). After Israel had become established in the Promised Land, intermarriage was strictly forbidden with the remnants of any enemies which still existed around them. God imposed this as a condition for Israel's continued occupation of the land (Josh xxiii). Neither women nor men were allowed to marry non-Hebrews (Neh xiii). Soldiers under good leaders would stay chaste during military expeditions to preserve their holiness (1Sam xxi). The harshest consequences, ranging from execution, to widespread plague, to the permanent breakup of Israel (1K xi), resulted from Hebrew men taking foreign women, whether as wives or simply as sexual partners.

A broader investigation of the Hebrew social system has yielded results consistent with the Biblical emphasis on ethnic homogeneity. In anthropological terms, the Hebrew people as traditionally endogamous, patrilineal, patriarchal, patrilocal, extended, and polygynous (Patai

1959). That is to say, they tended to marry close relatives, descent was determined from the father's line, the father was the head of the household, a married woman entered her husband's family, the patriarch's entire family lived with him, and a man could have more than one wife. The central message of the study of Patai (1959) is the strongly kinship-based social system of the Jews, and of other Middle Eastern peoples.

Again, all of this stress on ethnic homogeneity was closely linked to an even greater stress on exclusive monotheism. Idolatry (the worship of gods besides Yahweh) was the first prohibition in the Hebrew Decalogue, and the most mentioned sin in the Biblical histories. Often the reason given for the rules against intermarriage was the prevention of idolatry. Thus ethnic homogeneity was considered in the Hebrew Bible to be a means of assuring the proper and exclusive worship of God.

I contend, and hereafter assume, that the moral emphasis among the ancient Hebrews on *one God, one people* was adaptive for an early Hebrew in the face of threats to the integrity of the community, and by extension every individual in it. The *one people* theme ensured that the offspring of a Hebrew individual and relatives would continue to proliferate, that they might (in language redolent of evolutionary meaning) "multiply" their "descendents as the stars of heaven and as the sand which is on the seashore" (Gen xxii.17). The *one God* aspect of their moral code preserved a body of values that kept this ethnic homogenity and mutual benefit among kin from disintegrating. Without God's laws restricting interaction between the Hebrews and foreigners, the Hebrew people probably would have gone the way of the Hivites, Jebusites, and Amorites, small polytheistic peoples in the region whose group identities disappeared sometime during the tides of empires, if not before. I assume this hypothesis for purposes of this paper, although more work would be required to carefully present it, and even more to adequately test it.

Changes in Social Environment Approaching the Time of Jesus

Whatever the reasons for the spread of Greek culture from the third century BC, it was clearly

manifested in Palestine, whose integrity as a homeland of the Hebrews (by then largely

considered Jews) was already severely disrupted. This disruption was likely due partially to the

great might of the empires in comparison to the local enemies of early Hebrew history, and

partially to the fact that the Hebrews themselves were becoming less unified against the cultural

intrusions. Some of the ruling high-priestly families embraced the Hellenistic movement,

causing dissension against them among the people. At one point a pagan cult was even

established in the Temple (Rajak 1998). Only a small portion of the Promised Land was still

home to the descendents of Abraham, Isaac, and Jacob, and only a minority of these descendents

actually lived in the area any more. During a period of self-rule Israel tried to increase its

territory and to convert (and to some extent assimilate) foreigners, Idumeans and Itureans (Rajak

1998). The region was increasingly international and multiethnic. By the time the Roman

province of Judea was governed by Herod (himself an Idumaean convert), it contained a mixture

of Jews, Greeks, Samaritans, Syrians, and Arabs (Levine 1998). In sum, Hebrew cultural

integrity was increasingly assaulted in the Hellenistic period, due to both *external influence* and,

partially as a result, *internal divergence*, in ethnicity and societal values.

     After the only partially successful traditionalist revolt led by the Maccabee family, the

Jews were "divided over the nature of their privilege and separation" (Rousseau 1998). A

variety of opinions surfaced as to how best to deal with the apparently inexorable foreign

influence (McConville 1994; Greenspoon 1998). Movements towards stricter isolationism

persisted. However, by the time of Jesus many Jews understood that some degree of

reinterpretation of their distinctiveness was necessary. In biological terms, attitudes and behaviors adaptive in an earlier era were becoming less effective in furthering their interests, and they began to explore various prospects for either extending or altering these strategies.

Evolutionary Expectations for Moral Reform

According to the evolutionary account of human morality, what might an updated set of moral norms look like in such a social environment? If the hypothesis is correct that morality tends to adjust the customs of a people adaptively in a changing world, new moral emphases should arise. Moreover, individuals in the population might respond to social trends with different strategies. One possibility is an attempt to reverse the external influence and internal divergence through stricter and more vigorously enforced isolationist policies. Other possibilities would probably involve accommodation to the social changes to some extent.

I propose one key aspect of moral reform in accommodation to a change towards a more socially mobile or multi-ethnic society. Wherever individuals tend to interact with nonrelatives and even members of other ethnic groups on a regular basis, instead of generally dealing closely only with the extended kin group as the Hebrews had in their early history, a *shared values* aspect to social norms should increase in emphasis, relative to the *shared kinship* aspect. Members of such a society will make moral distinctions less often on the basis of relatedness, and more often on the basis of the values people hold and portray. The traditional Hebrew moral perspective emphasized shared kinship, which in a society like theirs would also have been a reliable indicator of shared values. If the above historical account is accurate, by the turn of the eras an individual was increasingly dealing with nonkin and even non-Jews. In certain areas of Palestine, to refuse to interact because others were not closely related or even not Jewish, might

have carried detrimental social consequences outweighing the benefits accrued through interacting preferentially with kin. Moreover, Jewishness itself was less reliable as a guarantee of shared values due to factions and dissension. From a biological point of view, I propose that the social strategies yielding fitness benefits via nepotism and via indirect reciprocity, though once coincident, were now diverging. Instead of choosing one's interactants solely on the basis of relatedness, social selection in the new environment might have favored those who chose interactants on the basis of their shared value system, thereby gaining greater benefits through indirect reciprocity. Aid given to like-minded members of the community will be returned with interest by them and other like-minded members (regardless of relatedness), including improvements in one's reputation (Alexander 1987).

Table 1 presents typically adaptive behavioral strategies, according to an evolutionary explanation of human moral systems in large-scale or mixed societies where indirect reciprocity is likely to be of primary importance. If the moral reform of Jesus as portrayed in the Sermon on the Mount reflects an adaptive adjustment to a new social environment, and if the particular mode of adjustment is accommodation rather than isolationism, then the moral statements in the Sermon should emphasize strategies in Table 1, particularly when they are at variance with, or at least not emphasized in, traditional Hebrew morality.

A Test of the Adaptive Significance of Jesus' Moral Reform

I have found 105 statements in the Sermon on the Mount (Mt v-vii) that I interpret as making moral claims, statements as to what actions or attitudes are to be viewed as good and bad. Statements repeated two or three times I considered separately, to reflect the emphasis given in the text. A veiled style of presentation (parable or metaphor) was employed in 22 (21%) cases. I

distilled these statements to 13 general principles espoused by at least 3 statements each in the text (Table 2). When statements were specific to an issue (e.g., on divorce, Mt v.31-32; on oaths, Mt v.34-37) I derived general principles from them consistent with critical commentary (especially Henry 1721; Vincent 1886; Bruce 1897; Stott 1978; France 1994). These principles were not selected to fit an evolutionary hypothesis, nor were they reduced to evolutionary terms (see Appendix for data by passage). As such, they are intended as a broad survey of the moral emphases of the Sermon. Some statements espouse more than one principle, and some principles overlap in their relevance to particular statements.

Intentionally introducing moral change

One of the central themes or principles of the Sermon on the Mount is the deliberate contrast between the new norms being presented, and the norms that would have been familiar to the Jewish people. Among the 13 principles in Table 2, the theme of changing moral emphases (#3) ranks third. Moreover, Jesus indicates with explanation and several examples the intended relation between the new laws and the old (Mt v.17-48). The new laws are extensions or modifications of accepted conventions. The repeated phrases "You have heard… but I say to you…," and their contexts, make clear that innovations were intended from previous interpretations of the Torah, or Law. Nevertheless, the Law itself was still to be obeyed (Mt v.19), and not relaxed or dissolved. Traditionalism and innovation are therefore in tension here, which can be appreciated from extra-Sermon statements such as Mk ii.21-22 where the new morality is poetically described as bursting or pulling away from the old. The remaining sections of the present chapter focus on the substance of these aspects of contrast.

espousing and acting on group-service values (Alexander 1990), the teachings encourage a transfer of attention from the former considerations to the latter (Table 2, principles #5, 12, 13). In this context, Mt vi.33 nicely presages the evolutionary expectations from this strategy, assuring that if one attends to what kind of person one is, the meeting of all physical needs will follow. Jesus then redirects kinship language, instructing people to look at the morally perfect Being as their heavenly Father (Mt vii.11), and to look at each other as kin to the extent that they share values: "Whoever does the will of my Father in heaven is my brother, and sister, and mother" (Mt xii.50; see also Mk iii.34-35). The prayer he suggests to his audience relates God universally to heaven and earth (Mt vi.9-10), not just to Israel as did the predominant prayer of the Torah (the *shemah*, Deut vi.4, ix.1). Instead of ethnic dispersion being the doom of evildoers, Jesus speaks of an eventual ostracism from God and the godly (Mt vii.2-23). Much of the Sermon on the Mount indicates divisions analogous to kin and nonkin, friend and enemy, Jew and Gentile, but based on *moral* differences rather than kinship, political, or ethnic differences. The concept of "neighbor" is reinterpreted along exactly the same lines, implicitly in the Sermon on the Mount, and explicitly in the Good Samaritan parable. The neighbor is not the person most closely related to you, nor the person who happens to be near you; the neighbor is the person with a certain set of values (Lk x).

Darwin and Alexander claimed that the division between in-group and out-group formed the social background for the evolution of human morality from its most primitive state. The considerations presented above show that this division is not abolished or ignored by Jesus' teachings in the Sermon on the Mount. Rather, the division is preserved but is placed along different lines. The social world is still binary, with a group to be for and a group to be against. One still must beware and distrust the majority of people, those who enter the broad gate rather

than the narrow, the evildoers who are headed for destruction (Mt vii.13-14; others in Table 2 principle #7). Jesus does not speak against foreigners and the uncircumsized, but he does condemn devious wolves in sheep's clothing, dogs and swine who are dangerous confidants, and foolish men without moral foundation (although these points must be considered alongside the important fact that people can change their group status). In the words of Stott (1978, 19), "There is no single paragraph of the Sermon on the Mount in which this contrast between Christian and non-Christian standards is not drawn. It is the underlying and uniting theme of the Sermon; everything else is a variation of it." Group-sensitive aspects of moral thought and behavior which evolved in a kin-dominated environment are thus redirected in Jesus' teachings, to fit with a more complex social environment. The in-group, delineated primitively on the basis of kinship, is recast in the Sermon on the Mount on the basis of shared values.

Strengthening the group by suppressing aggression

Human propensities that evolved in a nepotistic social environment may lead to problems with aggression and dominance in a society with greater anonymity, mobility, and diversity. Moral norms might accommodate to such a social system via the first adaptive social strategy in Table 1: suppression of competition within the group. Accordingly, nearly every moral prescription in the Sermon fosters suppression of competition either directly or indirectly. Most direct are the exhortations to humility, forgiveness, magnanimity, and the endurance of suffering (Table 2: principles #2, 4, 6, 13).

Enlarging the group by fostering shared values universally

The one apparent exception to the Sermon's effect of suppressing competition is the

encouragement to spread all of these particular ideas of good and evil to other people (Mt v.13-

16). This is consistent with the idea of the universal truth of Jesus' claims and the hope that

other people, Jew and Gentile, domestic and foreign, will eventually embrace these truths. This

value was not emphasized in the Hebrew scriptures, but is one of Jesus' strongest emphases

(e.g., Mt xxv.32-33; Mt xxviii.19-20; Mk xiii.10; Lk xxiv.47; Jn xiv.6). A proselytizing attitude

is likely to meet with competitive resistance from other people who hold differing views, as

Jesus reminded his disciples, even as he told them to evangelize anyway, and boldly (Mt x.13-

23, xxiv.9; Mk vi.10-11; Lk ix.5, x.10-16). This encouragement to spread the values espoused

by the Sermon is precisely the expected strategy according to evolutionary theory (Table 1,

second strategy). If, as I have proposed, values and not kinship are the primary basis for moral

distinctions among people in the new social environment, then values constitute the primary

criterion for membership in one's social group, and the spread of one's values enlarges the

group. Thus, moral emphases of Jesus that differ from those in earlier Hebrew tradition are

tailored to at least the first two adaptive strategies in Table 1, those that serve group stability.

Assuring shared values in personal relations

The last two strategies in Table 1 relate to personal benefits from social interactions, where

indirect reciprocity is a primary force. As discussed above, the lack of emphasis on kinship as a

basis for moral distinctions in the Sermon is accompanied by an increased emphasis on shared

values. In earlier periods, kinship would have served as an effective proxy. In a more diverse

and mobile social environment such as was developing by Jesus' time, evolutionary theory

implies that a greater priority on critical awareness of the actions and attitudes of others would be adaptive. Eleven (10.5%) of the statements in the Sermon are devoted to this issue (Table 2, principle #7). For instance, disciples are warned to watch out for those who may attempt to gain benefits from others' adherence to community norms without abiding by them themselves (Mt vii.15-23). These people are precisely the "cheats" of evolutionary studies of human sociality (Trivers 1971; Dawkins 1976). Cheats are a dangerous component in society because their strategy will be successful until enough members of society bear grudges against them and refuse to succumb to their parasitism. The fact that cheats will disguise themselves as reciprocating members of the community is central in the Sermon, and also in contemporary evolutionary theory. A cheat must avoid detection, for if detected the society is expected to begrudge the cheat the benefits that accrue to truer social participants. The Sermon's discussion of good and bad trees and their fruit (Mt v.16-20), can be understood in evolutionary terms as a lesson in cheat-detection. All nine instances in Jesus' teachings of the two cautionary words translated "beware" (προσεχω, βλεπω) warn against the dangers of other's moral deceit or corruption.

Enhancing individual reputation

In line with the final strategy in Table 1, the directive to manage one's own character is the most prominant theme in the Sermon on the Mount (especially Table 2, principle #1). The strategy Jesus preaches (and the one evolutionary theory predicts would be preached, if not followed) is to be "single-minded" in one's commitment to the values he presents (Bruce 1897). The word used (Mt vi.22) is άπλους, which creates an image of "a piece of cloth or other material, neatly folded *once*, and without a variety of complicated folds" (Vincent 1886, 41). The contrast is to a

hesitancy or calculation of a double minded person (e.g., Mt vi.24). Half of all the Sermon's

statements include a mention of consequences, and in all of them adherence to the guidelines

produces benefits for the individual so adhering, and failing to adhere produces long-term costs.

Appropriately, from the perspective of indirect reciprocity, the word used for the effect a moral

violation has on a person (usually translated "offend") is σκανδαλιξει, literally "scandalize" (Mt

v.29).

The Sermon particularly addressed temptations that would have been prevalent in a

society where deception as to one's commitment to group values might increasingly be perceived

as a shortcut to benefits (on which see Alexander 1989). Accordingly, there were seven

prohibitions against boasting, and seven against hypocrisy (Table 2, principles #9,10).

Regarding boasting, France (1994) points out that "deliberate ostentation for one's own prestige"

is warned against (Mt vi.1), and is distinct from the "natural testimony of a godly life," which is

encouraged (Mt v.16). Unfairly impugning the reputations of others was harshly condemned (Mt

vii.1-5), which is unsurprising considering the high importance of reputation in the context of

indirect reciprocity. As Bruce (1897, 128) writes, the traditional *lex talionis* of "eye for eye"

was reformed by Jesus into "character for character." In fact the text deals with public

perception of character, so the reformation is more precisely into "reputation for reputation." If

you injure another's maliciously, yours will be harmed in return.

Conclusion

The principles espoused in the Sermon on the Mount (Table 2) can be related to strategies that,

according to a Darwinian account of the evolution and biological function of morality, would

have been adaptive in the changing social environment of the Hebrews (Table 1). Although a

much closer study could be made, and many more data are available besides the Sermon on the Mount, the limited analysis here shows that Jesus' moral reform accords with expectations from evolutionary theory in a multi-ethnic society where shared values do not necessarily follow lines of shared ancestry, and where social costs and benefits require cooperation with nonkin. Moreover, Jesus' moral teachings represented a realignment of traditional Hebrew morality (Rousseau 1998). In the words of another commentator, "preexisting traditions were transformed" (Verhey 1993). What is suggested here is that these changes in emphasis are in line with Darwin's understanding of the evolution of morality, as recently expounded by Alexander and others.

These results lend support to the hypothesis that variation in morality, including moral reforms, can serve a biological function by acting as a cultural surrogate for genetic adaptation, as many other plastic human traits do. Change in moral norms can sometimes update or adjust typical human attitudes and behaviors in ways that are adaptive in new social environments.

Besides the prospects of a more detailed study of Jesus' moral reform, two other lines of research would further illuminate the relation of social changes in ancient Palestine to changes in morality. First, Hebrew culture before Jesus was not monolithic, nor was its state of morality constant. A closer look at later writings in the Hebrew Bible and afterwards would shed light on precisely how Hebrew culture was evolving. Given the diversity of perspectives at the time, some of these later writings are likely to have exhibited isolationists tendencies, but others might have approached Jesus' innovations, particularly among people who could benefit from interaction with foreigners. Second, Jesus and the Christianity he inspired constitute only one of the two major traditions to arise from the social upheaval of late antiquity in Palestine. Religious historians and Jewish scholars, not surprisingly given the hypothesis presented here, generally

present Judaism as entering its second major phase (often termed rabbinic or pharisaic-rabbinic) during this time period (Kellner 1991; Geller 1998). A look at the synapomorphies, or shared derived features, among the two traditions would be very insightful. What aspects of Christianity and rabbinic Judaism caused both groups to succeed and others to fail? According to Geller (1998) they appear to have shared several cultural characteristics. Isolationism or insulation from outside influence may have persisted in areas where they were feasible and beneficial. Among other more cosmopolitan subgroups, rabbinic Judaism might have undergone a moral evolution that bears interesting parallels to that encouraged by Jesus.

Table 1. Socially selected strategies in human societies (see Trivers 1971; Alexander 1979; 1987; Barkow, Cosmides, and Tooby 1992).

Returns to fitness	Social Strategy
Group stability (benefit accrues to all members)	Foster suppression of competition
	Spread values of group-service (beneficence)
Profitable personal interactions (benefit accrues to self and close kin)	Track the reputations of others; ally with the beneficent; detect and avoid cheats
	Foster a beneficent reputation for oneself; avoid being considered a cheat

Table 2. Thirteen moral principles espoused in the Sermon on the Mount. Some statements espouse more than one principle.

Principle	Number of statements espousing it	Mentions of reward or consequences
1. Focus on God and perfection	40	19 (48%)
2. Pursue humility	30	15 (50%)
3. New law rises above or extends old law	29	7 (24%)
4. Forgive and reconcile	23	12 (52%)
5. Trust God for needs	14	5 (36%)
6. Be magnanimous	11	3 (27%)
7. Beware of others' wickedness	11	2 (18%)
8. Spread these ideas and lifestyle	9	6 (67%)
9. Do not seek human praise	7	7 (100%)
10. Do not be a hypocrite	7	4 (57%)
11. Thought is as important as deed	6	1 (16%)
12. Seek heavenly, not earthly goals	6	3 (50%)
13. Suffering can be beneficial	5	5 (100%)

Appendix. Categories of moral principles espoused in the Sermon on the Mount by passage. See Table 2 for principles corresponding to codes 1-13.

Passage	Codes	Passage	Codes	Passage	Codes	Passage	Codes
Mt05.03	2	Mt05.34b	2,3	Mt06.13a	1	Mt07.06a	7
Mt05.04	2,13	Mt05.35a	2,3	Mt06.13b	1	Mt07.06b	7
Mt05.05	2	Mt05.35b	2,3	Mt06.14	4	Mt07.07a	1,5
Mt05.06	1	Mt05.36	2,3	Mt06.15	4	Mt07.07b	1,5
Mt05.07	4	Mt05.37	2,3	Mt06.16	2,9	Mt07.07c	1,5
Mt05.08	1	Mt05.39a	2,3,4,6	Mt06.17-18	2,9	Mt07.09-11	1,5
Mt05.09	4	Mt05.39b	2,3,4,6	Mt06.19	1,2,12	Mt07.12	3,4,6
Mt05.10	1,13	Mt05.40	2,3,6	Mt06.20	1,12	Mt07.13a	1
Mt05.11	1,13	Mt05.41	2,3,6	Mt06.22	1,11	Mt07.13b	1,7
Mt05.13	8	Mt05.42	3,6	Mt06.23a	1,11	Mt07.14	1,7
Mt05.14	8	Mt05.43	3,6	Mt06.23b	1,11	Mt07.15	7
Mt05.15	8	Mt05.44a	2,3,4,6,8	Mt06.24a	1,12	Mt07.16a	7
Mt05.16	8	Mt05.44b	3,4,6,8	Mt06.24b	1,12	Mt07.16b	7
Mt05.17a	3	Mt05.46	1,3,4,6,8	Mt06.25a	5	Mt07.17	7
Mt05.17b	3	Mt05.47	1,3,4,6,8	Mt06.25b	5	Mt07.18	7
Mt05.19a	3	Mt05.48	1,3	Mt06.26	1,5	Mt07.19	7
Mt05.19b	3,8	Mt06.01	2,9	Mt06.27	5	Mt07.20	7
Mt05.20	1,3	Mt06.02	2,9	Mt06.28	5	Mt07.21	1
Mt05.21-22a	3,4,11	Mt06.03-04	1,2,9	Mt06.28-30	1,5	Mt07.22-23	10
Mt05.22b	3,4,11	Mt06.05	2,9	Mt06.31	5	Mt07.24-25	1
Mt05.23-24	4	Mt06.06	1,2,9	Mt06.33	1,5,12	Mt07.26-27	1
Mt05.25	4	Mt06.07	1,2	Mt06.34	5,12		
Mt05.28	3,11	Mt06.08	1,2	Mt07.01	2,4,10		
Mt05.29	1,13	Mt06.09	1	Mt07.02a	2,4,10		
Mt05.30	1,13	Mt06.10a	1	Mt07.02b	2,4,10		
Mt05.31	3,4	Mt06.10b	1	Mt07.03	2,4,10		
Mt05.32	3	Mt06.11	1,5	Mt07.04	2,4,10		
Mt05.34a	2,3	Mt06.12	4	Mt07.05	2,4,10		

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