

Subsistence and the Evolution of Religion

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Abstract We present a cross-cultural analysis showing that the presence of an active or moral High God in societies varies generally along a continuum from lesser to greater technological complexity and subsistence productivity. Foragers are least likely to have High Gods. Horticulturalists and agriculturalists are more likely. Pastoralists are most likely, though they are less easily positioned along the productivity continuum. We suggest that belief in moral High Gods was fostered by emerging leaders in societies dependent on resources that were difficult to manage and defend without group cooperation. These leaders used the concept of a supernatural moral enforcer to manipulate others into cooperating, which resulted in greater productivity. Reproductive success would accrue most to such leaders, but the average reproductive success of all individuals in the society would also increase with greater productivity. Supernatural enforcement of moral codes maintained social cohesion and allowed for further population growth, giving one society an advantage in competition with others.

Key words: Religion; Evolution; Subsistence; Foragers; Pastoralists; Supernatural punishment

What could have prompted individuals of our highly successful species to obey an unseen being who told them what they should and should not do? Empirical studies of the evolution of religion have focused on belief in a High God, defined as a single, all-powerful creator who may be active in human affairs and supportive of human morality (Swanson 1960). It has often been assumed that High Gods evolved in response to recurring natural disasters such as drought, and the stresses of population growth such as increased disease, anonymous crime, intensified competition for resources, enhanced threat of free-riding, and the related issues of a host of collective-action problems (Norenzayan and Shariff 2008; Roes 1995; Roes and Raymond 2003; Swanson 1960; Underhill 1975). This view is a legacy of Swanson's *Birth of the Gods* (1960) and its finding that active or moral High Gods are more likely to be found in societies with burgeoning populations and greater jurisdictional complexity. Swanson defined a High God as "a spirit who is said to have created all reality and/or is reality's ultimate governor. . . . [This] includes spirits whose sole act was to create the other spirits who, in turn, produced the natural world" (1960:210). There are, however, other types of gods often found alongside High Gods.

The range of belief in High Gods varies among societies. A High God may be *absent*. Or if present, a High God may be *inactive* in human affairs, taking no further interest in the reality that was created. High Gods may be *active* in human affairs but do not push a moral agenda. Still

others are *moral* High Gods who are present, active, and specifically supportive of human morality.

Swanson analyzed the presence or absence of belief in a High God in a sample of 50 societies from the *World Ethnographic Sample* (Murdock 1957). His results indicated a positive relationship between the presence of a High God and the size and political complexity of a society as measured by number of levels of sovereign groups. Peregrine (1996) partially replicated Swanson's (1960) approach in a sample of 72 native North American societies and confirmed the relationship between number of levels of sovereign groups and the presence of a High God.

In contrast to Swanson, Underhill (1975) analyzed a larger sample from the *Ethnographic Atlas* (Murdock 1967) and showed that economic complexity, defined as a summary of nine measures of subsistence and resource contribution, is more strongly related to the presence of a High God than political complexity. Underhill noted that economically complex societies have the resources to support religious specialists.

Others have found broad measures of subsistence and social complexity to be predictive of moral High Gods (Roes 1995; Roes and Raymond 2003; Sanderson and Roberts 2008; Simpson 1984; Stark 2001) in samples from the *Atlas of World Cultures* (Murdock 1981) and the *Standard Cross-Cultural Sample* (SCCS) (Murdock and White 1980). Snarey (1996) and Roes and Raymond (2003) showed that moralizing High Gods are more likely to be present among societies where drought is a constant source of ecological stress.

Archaeological evidence for a cause-effect relationship between economic determinants and religion is tantalizing. Rodrigue's (1992) study of temporal relationships between the appearance of surplus storage, trade, and animal sacrifice in the Near East demonstrates that changes in subsistence economy and technology preceded evidence for animal sacrifice or artifacts generally construed as being religious. In a random selection of 51 Near Eastern archaeological sites dating from 20,000 to 5,000 years BP, evidence for surplus storage and exchange (e.g., storage pits and buildings, vessels, granaries, silos) consistently precedes that for animal sacrifice (e.g., whole or partial animal or human burials in building foundations, oddly arranged bones, altars surrounded by ashes with animal or human remains or figurines among them). Fuller and Grandjean (2001) confirmed similar patterns in a study of the type and timing of appearance of utilitarian grave goods at 40 Neolithic archaeological sites in the Near East. Functional grave gifts more strongly related to economic surplus (especially herding and grain) preceded the appearance of grave goods related to wealth and social complexity (decorative gifts and human figurines associated with religious belief). Furthermore, utilitarian grave goods never appeared without surplus, suggesting that changes in the subsistence economy preceded and shaped many Neolithic social institutions, including religion.

Despite a recurring theme in the literature that has associated the presence or absence of High Gods with subsistence technologies and broad measures of economic, political, or social complexity, little attempt has been made to clarify competing explanations, or to suggest a causal direction through which social and ecological forces led to the evolution and spread of belief in High Gods. In order to paint a clearer picture of those forces at work, we focused on social evolution that begins with mode of subsistence. We take a dynamic view of subsistence by comparing and contrasting specific ecological parameters, population stresses, and social structures that distinguish among the four modes of subsistence: foragers, pastoralists, horticulturalists, and intensive agriculturalists. These four modes have been linked to other findings regarding the evolution of social norms and institutions (Borgerhoff Mulder et al. 2009;

Henrich et al. 2010). What circumstances could have triggered belief in a single creator, or gods that affect the lives of humans, or one all-powerful god of morality? What characteristics of High Gods ensured that they would be culturally sustained, and why?

In this paper we propose that religious behavior is linked to individual selection operationalized by specific ecological factors and population stresses. The result is enhanced individual reproductive success (more so for some than for others, of course), increased group strength through population growth, and success in competition with others for resources. The relationship between moralizing gods and the subsistence technology of a society is mediated by the dynamics of natural selection and cultural evolution.

For our analyses we used variables that directly measure the effect of subsistence mode, population size, and social stratification on the presence and nature of High Gods in the 186 societies coded in the SCCS (Murdock and White 1980). Our dependent variable, High Gods, is a three-value ranked variable that combines the *active* and *moral* High Gods into one category. We did this to differentiate High Gods that actively direct human affairs, moral or not, from those in two other categories, one in which a creator High God is present but *inactive* in human affairs, and a third in which a High God is *absent*. We view our dependent variable as measuring belief in supernatural meddling and clout on a scale from less to more.

We investigate what factors explain where societies sit along the continuum from no High God to an inactive High God to an active/moral High God. We make three predictions.

First, we predict that the presence and involvement of High Gods will generally increase on a continuum of increasing productivity from foragers to horticulturalists to intensive agriculturalists, with pastoralists occupying a unique position owing to their moveable but defensible resource base and necessary mobility.

Subsistence activities occurring in different environments, using different extractive technologies, would benefit differentially from the presence of a High God who encouraged cooperation and moral constraint. For example, simple foragers are mostly egalitarian; live in small, mobile groups; and extract resources directly from the environment using simple technologies. Small populations of individuals who are often capable of acquiring food for themselves make social-action problems less of an issue among foragers. When disputes arise, they are solved by individuals moving from one camp to another. Thus simple foragers would be the least likely to accept or benefit from the social constraints of High Gods (which are a bit like “high rulers”). In contrast, complex foragers and agricultural societies vary in degree of stratification. Some likely had no leaders while others had leaders but no moral religion. Still others had both leaders and moral High Gods. These last societies might be better at solving the most urgent collective-action problems. Their leaders could use the threat of supernatural punishment to control stealing, personal assault, disorderly conduct, and cheating on contributions to public works (Atkinson and Bourrat 2011; Johnson 2005; Sosis 2000). The result would be increased group cohesion leading to larger populations, greater stratification, and greater cooperative success when competing against other groups for resources.

Once plant domestication occurs, sedentism increases and populations grow as increased food production per square kilometer eventually leads to higher fertility (Bentley et al. 1993). As a result, horticulturalists and intensive agriculturalists encounter new problems of collective action not faced by foragers. Horticulturalists often combine cultivation with some foraging. They are close to foragers on the productivity-subsistence continuum but less mobile and less autonomous with respect to acquiring food. We might expect to see a pattern of High Gods among horticulturalists similar to that of foragers. But increased food production leads to larger

villages and related social problems (crime, disease) that reduced mobility exacerbates. The beginnings of stratification appear among horticulturalists (and complex foragers) in the form of charismatic, entrepreneurial community leaders (“big men”) who begin to establish conventions that institutionalize social controls (Johnson and Earle 2000). These leaders would gain personal power, prestige, and enhanced reproductive success from their association with active High Gods who lend support to their initiatives. Even if they were not the originators of the concept of a High God they would likely have been promoters of it.

Agriculturalists reside at the far end of the continuum, excelling in production of resources while being sedentary. Emergence of early agricultural societies benefited from the efficiency and success of cooperative labor. The demands of public works such as construction of communal storage facilities, defensive perimeters, and irrigation networks overcame limits to growth and made possible the population booms that led to big city problems (Boone 1992; Childe 1950). It is now clear that agriculture began in a range of habitats from dry to wet. But the high productivity of a managed irrigation system was fundamental to the formation of pristine states in the Mexican highlands, coastal Peru, Egypt, the Indus Valley, Middle East, and possibly China (Johnson and Earle 2000). These societies were highly stratified and their leaders would gain the most from moral conventions that reduce chances of fissioning and also ensure high levels of cooperation. But the population as a whole would eventually benefit as the society expands at the expense of other competing groups.

Pastoralists do not fit easily on the three-way continuum from foragers to horticulturalists to agriculturalists. Pastoralists are more mobile than foragers but also more stratified. They are often on the move in small groups sparsely scattered throughout vast areas of land. Their most important and often main source of subsistence exists in the form of large, divisible amounts of energy and wealth which can be stolen: their herd animals.

To test the relationship between High Gods and subsistence, we created a variable that clearly differentiates between the four major categories or modes of resource acquisition. (See “Methods” for the construction of our independent variable Mode of Subsistence.)

Second, we predict that the likelihood of High Gods will increase with society size as measured by total population. The presence in a society of a moral High God, with new codes of conduct that reduce intra-group conflict and fissioning and stabilize stratification, would allow further population growth and thereby domination over smaller societies. We tested for the effect of population size on High Gods using a variable that is a direct measure of total population instead of the indirect measure (number of jurisdictional levels) used in prior studies.

Third, we predict that as pressures of increasing population result in stratification, there is a greater likelihood that active or moral High Gods will be found in those societies with more social stratification. We surmised that once stratification increased it would allow further growth in population, with stratification and increased population acting in a feedback loop, but with population being the more fundamental (Boone 1992).

As populations grow and wealth accumulates, skillful political entrepreneurs emerge as de facto leaders who aggrandize their power, prestige, and authority by manipulating social inequality to attain personal goals. Promotion of commitment to belief in a moral High God who commands cooperation enforced by supernatural punishment would be an appealing tool for such an individual (Irons 2001).

We tested the relationship between stratification and High Gods with a new variable that more aptly measures the change from less to more stratification. (See “Methods” for the construction of our variable Social Stratification.)

Methods

We tested the relationship between belief in High Gods and three closely linked variables—subsistence, population, and stratification—using variables in the *Standard Cross-Cultural Sample* (SCCS) (Murdock and White 1980) available on the *World Cultures* CD (Divale 2007). The SCCS includes 186 societies from the *Ethnographic Atlas* (Murdock 1967) chosen to create an unbiased sample of the world’s societies with respect to geographic region, language family, and cultural area.

Our dependent variable, High Gods, is a three-value, ranked measure which we interpret as ranging from (1) lesser to (2) greater to (3) even greater power of supernatural meddling and coercion. High Gods is a recoding of SCCS variable 238 “High Gods” (Swanson 1960; Murdock 1967). Our High Gods variable differentiates between societies in which a High God is (1) *absent*, (2) present but *inactive* in human affairs, or (3) *active* in human affairs and/or provides *moral* guidance. Our sample from the SCCS totals 168 societies that have been coded for High Gods. (See Appendix A for coding details.)

We use three main independent variables: (1) Mode of Subsistence, (2) Population Size of the society, and (3) Level of Social Stratification. Other independent variables are used to illuminate which aspect of subsistence is most influential: animal husbandry, contribution of hunting-gathering-fishing, or growing crops.

We created the independent variable Mode of Subsistence by recoding the values of SCCS v1, v3, and v5 (Murdock and Morrow 1970) and v858 (D. R. White after Paige and Paige 1981) to clearly differentiate between four types of economic complexity: foraging, pastoralism, horticulture, and intensive agriculture. (See Appendix A for coding details.)

A second independent variable was v1122 log₁₀ of Total Population (Murdock and White 1969) recoded as Total Population. (See Appendix A for coding details.)

Our third independent variable, Social Stratification, was created by recoding v158 (Murdock and Provost 1973) and v270 (Murdock 1967) to clarify and measure the degree of change in stratification from low to high more clearly than the two individual variables. (See Appendix A for coding details.) The resulting variable measures three levels of social stratification in our sample: egalitarian, wealth distinctions, and social classes/castes.

Additional related independent variables measured were dependence on Gathering v203; Hunting v204; Fishing v205; Animal Husbandry v206; and Agriculture v207 (Murdock 1967). (See Appendix A for coding details.)

Values of relevant variables for the 186 societies in the SCCS are given in the EMS.

Results

We first describe the rough texture of data in our three categories of High Gods as they appear within the individual variables of subsistence mode, total population, and stratification. Because these variables are inextricably commingled in the dynamics of social evolution, we then apply ordinal logistic regression to tease apart their effects on High Gods.

First, we found that the absence, presence, and nature of High Gods vary significantly with Mode of Subsistence ($\chi^2_6 = 35.44, p < 0.0005$). A contingency table for the chi-square is provided in Appendix B.

Figure 1 depicts the relationship between High Gods and the subsistence economy. High Gods are present in all types of societies, but far less often among foragers and horticulturalists. Foragers are far more likely to have inactive High Gods or no High Gods at all. Across societies

including horticulturalists, agriculturalists, and pastoralists, those with animal husbandry contributing more to their diet have a greater likelihood of having a High God.

The strength of the differential effect of subsistence on the presence of High Gods is confirmed through Mann-Whitney pairwise comparisons of the four modes of subsistence (foragers, pastoralists, horticulturalists, and agriculturalists) against High Gods as shown in Table 1. The greatest numerical difference in the presence of High Gods is between foragers and pastoralists ($U = 133, p < .0005$), followed by horticulturalists and pastoralists ($U = 298.5, p < 0.0005$), then foragers and agriculturalists ($U = 501, p < 0.0005$), and then horticulturalists and agriculturalists ($U = 1113.5, p = 0.002$).

In our analysis pastoralists are seen as uniquely positioned outside the productivity continuum from foragers to horticulturalists to agriculturalists. This is confirmed when pastoralists are removed from our subsistence variable. The remaining modes—coded as foragers = 1, horticulturalists = 2, and agriculturalists = 3 to represent ranks of increasing productivity—show a significant and positive correlation with High Gods ($\rho = 0.303, p < 0.0005$).

Among our sample of forager societies, 58% had no High God and 88% had either no High God or one that was inactive. In comparison, High Gods were present in 80% of the pastoralist societies in our sample, and where a High God was present, 94% of those High Gods were active or moral. Similarly, High Gods were present in 73% of agricultural societies, and of those where a High God was present, 62% were active or moral.

Animal husbandry is by far the strongest subsistence-related predictor of High Gods (Spearman's $\rho = 0.429, p < 0.0005$). Figure 2 depicts the relationship between High Gods and percent dependence on animal husbandry as a contribution to subsistence of a society.

Inactive High Gods give way to active or moral High Gods in societies with the largest percent dependence on animal husbandry. The latter would include committed pastoralists and some agriculturalists.

Correlations testing High Gods against percent dependence on hunting, gathering, fishing, animal husbandry, and agriculture (as contribution to subsistence) showed animal husbandry (Spearman's $\rho = 0.429, p < 0.0005$) and agriculture ($\rho = 0.152, p = 0.050$) as positive predictors. Hunting, gathering, and fishing (forager subsistence technologies) were, as expected, negatively correlated (hunting $\rho = -0.211, p = 0.006$; gathering $\rho = -0.290, p = 0.006$; fishing $\rho = -0.271, p < 0.0005$). It is mainly among foragers that High Gods are absent, or are inactive if present at all.

Second, in larger populations there is a greater likelihood of belief in High Gods (Spearman's $\rho = 0.387, p < 0.0005$). Figure 3 shows the relationship between society size (Total Population) and the presence of belief in High Gods. The prevalence of active and moral High Gods increases in direct proportion to population size. High Gods are absent or inactive in more than 95% of the smallest populations (between 10 and 999), which consist of the forager societies. This result supports our prediction that moral High Gods will be more prevalent in societies with larger total populations.

Third, when there is greater social stratification in a society there is a greater likelihood of having an active or moral High God (Spearman's $\rho = 0.222, p = 0.004$). Figure 4 depicts the positive relationship between degree of social stratification and the presence of belief in High Gods. More than 80% of egalitarian societies have either inactive High Gods or none at all. Active or moral High Gods are present in nearly 40% of societies with either wealth distinctions

or classes. This finding supports our prediction that there is a greater likelihood that active or moral High Gods would be found in those societies with more social stratification.

The effect of increased population size on stratification ($B = 0.502, p < 0.0005, df = 4$), is greater than that of stratification on population size ($B = 0.402, p < 0.0005, df = 4$) when controlling for subsistence mode. This suggests that increased population leads to stratification, which makes it easier to handle the greater number of collective-action problems and reduces the likelihood of fissioning. Stratification in turn acts in a feedback loop to underpin further increases in population (Boone 1992).

Fourth, we applied ordinal logistic regression to tease apart the effects of closely related predictor variables Mode of Subsistence, Social Stratification, and Total Population on High Gods. Ordinal logistic regression specifically addresses the ranked nature of our dependent variable, which measures increasing power of supernatural meddling and coercion in a society. Pastoralism was used as the reference category for subsistence in this regression because prior analyses indicated that pastoralists are the most likely to have High Gods. The cumulative effects of Social Stratification, Total Population, and Mode of Subsistence as they interact with High Gods are shown in Table 2.

Table 2 shows that both subsistence mode and population size are significant predictors of the presence and type of High Gods. The negative coefficient estimates indicate that societies dominated by foraging, horticulture, and intensive agriculture are more likely to score lower on the High God variable than a society employing the mode of pastoralism. Similarly, in a society whose population size resides in the two smallest ranks of our population variable, there is a greater likelihood of finding either an inactive High God or none at all.

Any effect of stratification on High Gods drops out in the presence of mode of subsistence and population size in this regression. The usual interpretation is that the effect of population size on High Gods overwhelms that of stratification, or that stratification has little or no independent predictive power on the presence of High Gods. However, the close relationship between population increase and stratification suggests that any independently large predictive effect of stratification on High Gods might only be found in those hard-to-find cases where large populations are not involved.

Discussion

Our results suggest that a significant selective force promoting the concept of a morally supportive High God was the herding and keeping of animals. Supporting this conclusion is the statistically large contribution that pastoralism makes to the likelihood that a society will have an active or moral High God when other variables such as population and stratification are taken into account.

Furthermore, the most prevalent High God among pastoralists and agriculturalists is one that is active in human affairs or is morally supportive. Finally, the largest difference in belief in High Gods among the four modes of subsistence is that between foragers and pastoralists. What specific attributes of pastoralism and the economies of animal husbandry could have stimulated the birth of moral High Gods?

First consider simple foragers, most of whom do not depend on resources they have to tend and defend. Most foragers are self-sufficient and usually require less cooperative labor (Marlowe et al. 2008). They are able to survive on a variety of resources and occupy a wide

range of habitats (Porter and Marlowe 2007). Most foraging societies are egalitarian and by nature resistant to others dictating what they should do. They would resist the concept of a demanding High God, and thus be less susceptible to evangelism.

In contrast, pastoralists are in constant and direct contact with their main source of subsistence and livelihood in a landscape filled with moment-to-moment contingencies. Situations often become quickly unstable (herds scattering) or dangerous (attacks by marauders or wild animals). Blood feuds within and among groups are not uncommon (Dyson-Hudson and Dyson-Hudson 1980). Pastoralists have the highest frequency of warfare across the four modes of subsistence (Marlowe 2011), which increases the need for collective action. Recurring environmental and ecological threats take on enhanced importance because of the self-generating wealth embodied in herded animals. When drought devastates pasture, disease decimates herds, and constant violence over grazing rights becomes unrelenting, a bond of cooperation within one group or tribe must provide a survival advantage when challenged by other feuding groups.

Settled agriculturalists face similar environmental threats owing to reliance on controlled production of resources within a circumscribed area. Group size will grow with increased food production, which may depend on cooperative efforts. Drought, disease, and social-action problems constantly threaten famine. If the costs of cooperation outweigh the benefits, groups will fission as individuals leave for less-competitive resource environments. When leaving is not a good alternative, a population may remain intact even though some individuals are at a disadvantage. The result is inequality (stratification) and exploitation of others by certain individuals or kin groups (Boone 1992).

Achieving this type of stable inequality is more difficult as large populations continue to grow larger, requiring incentives beyond those of reciprocity or mutualism, and costly sanctions that punish free-riders. Activities related to “public goods,” such as the maintenance of permanent storage facilities or the need to mount a strong defense against marauders, present cooperative challenges (Boone 1992). Everyone benefits, but the costs of maintaining them are very high.

One scenario for achieving the levels of cooperation and prosociality needed to stabilize larger populations (or growing ones) suggests the emergence of an authority figure. Heightened environmental threat has been shown empirically to be a primary contributor to the manifestation of the authoritarian personality and the social psychology that engenders coalitions, cooperation, and religiosity (Hastings and Shaffer 2008). Even among fiercely independent horticulturalists or complex foragers an individual usually stands out as more successful and influential than the others, a political entrepreneur who can assume leadership. Under extraordinary pressure to survive, this type of individual would likely recognize the value of coercing others into mounting a cohesive defense against external threat or banding together to build and maintain new subsistence technology. The concept of a moral High God would have been an appealing tool to use as leverage.

A High God demanding new codes of conduct, backed by threat of supernatural punishment, would force cooperation and deal with those seeking to gain benefits without paying the costs or doing the work. Free-riders would not be able to hide from an all-seeing God. Costs of punishment and incentives could be delegated to the supernatural (Sosis 2000).

Success of the High God would, by association, translate into power and success for the leader in authority. The “big man” would have benefited by virtue of gaining more resources or greater social influence or access to more wives. But the result would have been both personal and public good (Boone 1992) as all levels of the society gained in resources and reproductive success.

Should failure occur, leaders could avert blame by invoking an angry god or the triumph of evil forces. This type of authority is based on the evidence of a god and, from the perspective of the leader, thankfully cannot be tested. It is supernatural in nature and founded on faith.

The conceptual seed of a paternalistic High God that meddles in human morality and promises social order probably originated several times in many societies. This type of monotheistic god found fertile ground in the threatening landscape of pastoralism. A broader contextual view, based on Whiting’s theory of psychocultural evolution (Worthman 2010), might suggest that belief in a High God is the projection of the pastoralists’ sense of insecurity in the face of unmitigated ecological threat. A High God enforcing cooperation could result in coalitions that replace internecine feuding with successful defensive alliances. As cooperation reduces fissioning, populations grow and stratification increases, which stabilizes social cohesion and enables further growth. Success of the new cultural variant of “god” would compete with other religions, spreading through imitation and diffusion (Richerson and Boyd 2005).

The success of a moral High God would also be very appealing to leaders in subsistence economies based mainly on settled agriculture, where drought, disease, famine, and social disruption threaten population growth. Hints of this link may exist in the similar content of creation stories found in herding and agrarian societies (Moor et al. 2009).

We propose that belief in active or moral High Gods stemmed from challenges encountered by individuals employing modes of subsistence that demanded the effective manipulation and cooperation of others in order to produce, manage, and defend vital resources. Constant threats to subsistence and survival engendered, for pastoralists and some agriculturalists, the practical idea of promoting belief in a powerful spiritual force that could promise deliverance from the enemy, and punish those who did not follow the rules of cooperation and moral constraint. The coercive power of religion was used to facilitate cooperation for the benefit of higher-status individuals, which in turn benefitted the whole group. The success of this strategy was copied, and it led to the transformation of human societies into higher levels of collective, economic organization that sustained larger populations.

Our findings would suggest several lines of future research that would focus on the relationship between High Gods and other variables, such as warfare, intragroup hostility, and magico-religious practices. What is the nature of other kinds of gods existing alongside High Gods? This research has shown the importance of High Gods to achieving cooperation in growing populations or those under environmental stress. How do many modern societies, confronted with similar problems, achieve cooperation and success without High Gods?

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Appendix A goes here (text)

Appendix B goes here (tables)

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Figure 1. Relationship between the presence and absence of High Gods and the subsistence economy of a society. The numbers inserted inside each box represent n within a given High God category within that particular mode of subsistence. The total n of societies within each subsistence mode is shown below each of the four mode labels.

Figure 2. Relationship between percent dependence on animal husbandry and High Gods. Numbers inside boxes represent n within a given High God category within each level of dependence on animal husbandry.

Figure 3. Relationship between society size and presence or absence of High Gods. Numbers inside boxes represent n within a given High God category within each level of population size. Total n within each of the four population categories is shown below each population category label.

Figure 4. Relationship between social stratification and High Gods. Numbers inside boxes represent n within each High God category within that level of stratification. Total n of societies within each level of stratification is shown below the label of each of the three levels.