



# The Evolutionary Forms of the Religious Life: A Cross-Cultural, Quantitative Analysis

**ABSTRACT** Previous cross-cultural studies of religion's evolution that employed Swanson's High Gods measure are plagued by methodological difficulties, especially the lack of proper statistical controls. Here, we attempted to rectify this, using the Standard Cross-Cultural Sample to test five hypotheses employing multivariate statistical techniques. Results provided weak support for Swanson's Sovereign Groups hypothesis concerning High Gods and also limited support for a previously unexplored factor: writing and record keeping. In phase two of the study, we introduced a new measure, the Stage of Religious Evolution, based on Anthony Wallace's typology. When this new dependent variable was substituted for High Gods, much stronger results were obtained. The best predictors of Stage of Religious Evolution were mode of subsistence economy, writing and record keeping, and total population size. These findings allowed us to construct a new evolutionary interpretation of the development of different modes of religious life. [Keywords: evolution, religion, polytheism, monotheism, priests]

**A**NTHROPOLOGISTS have had a long-standing interest in the comparative study of religion, including the origins and evolution of religion, dating back to the classic works of Émile Durkheim (1947) and Edward B. Tylor (1871) in particular. However, there have been few studies using both a cross-cultural and a quantitative approach. This line of research was initiated by Guy Swanson in his famous *Birth of the Gods* (1960), and similar work has been carried out by William Davis (1971), Ralph Underhill (1975), Peter Peregrine (1996), Frans Roes (1995), and Roes and Michel Raymond (2003). Different cross-cultural samples have been used and a variety of hypotheses have been tested, but the research findings have been severely limited by a number of problems, in particular lack of proper statistical controls or any type of multivariate analysis and, in some instances, very small samples.

In this study, we continue in the tradition of cross-cultural, quantitative research, but we attempt to rectify these methodological problems. The central question of the research is what accounts for the development of different types of religious beliefs and practices throughout long-term social evolution? We advocate an evolutionary perspective in the comparative study of religion and are in strong agreement with Rodney Stark and William Sims Bainbridge when they say that "any adequate theory of the

relationship between the nature of societies and the nature of their gods must place major emphasis on change. Neither societies nor gods simply pop into existence. When we examine societies and their gods, we must ask how both developed, rather than treating them as static entities" (1987:55). The present study is thus a study of how different kinds of gods, religious practices, and religious practitioners developed in human societies.

## PREVIOUS RESEARCH

### *The Durkheimian Perspective: Swanson and Sovereign Groups*

Swanson's *The Birth of the Gods* (1960) was the first major quantitative study of the origin of religion in human societies and has inspired much of the later research on the topic. Swanson's work was derived from Durkheim's (1947) classic theory of religion, which assumes that individual deference to religious belief is in reality a form of deference to one's society. Swanson thought of the religion of a society in terms of whether or not it possessed a "high god," which is a deity that is presumed to be "the sole creator of the universe" and that "rules the world and heavens" (Swanson 1960:56). Swanson pointed out that high gods are not limited to the monotheistic major world religions

or even to the polytheistic religions that preceded them. They often exist even in small-scale, preliterate societies.

Using Durkheimian logic, Swanson argued that the presence of a high god will be related to the number of hierarchically organized sovereign groups a society possesses, a sovereign group being one that has an independent jurisdiction over a particular realm of social life. This is because a high god will be a personified being that represents a sovereign group's desire to maintain order and diversity among subordinate sovereign groups. To test his hypothesis, Swanson used a sample of 50 preliterate societies derived from the *World Ethnographic Sample* of 556 societies (Murdock 1957). The hypothesis was well supported. In societies with one or two sovereign groups, only 11 percent had a high god, whereas in societies with three sovereign groups, 78 percent had a high god, and in societies with four or more sovereign groups, 91 percent possessed a high god.

Peregrine (1996) has attempted a partial replication of Swanson's findings using a sample of 72 native North American societies. Like Swanson, he found a very strong relationship between the number of sovereign groups and the presence of a high god.

#### **Davis's Evolutionary Hypothesis**

Davis (1971) used a stratified probability sample of 60 societies to retest the sovereign groups hypothesis. His retest achieved statistical significance, but the relationship was not as strong. Davis then attempted to improve on Swanson by using an evolutionary approach concentrating on modes of subsistence technology.

Davis found that as societies moved to higher technological stages, the belief in a high god became increasingly common. He also found that as societies became more complex, high gods were increasingly perceived as being concerned with human morality. A high god was seen as morally active in only nine percent of hunting and gathering societies but was perceived as active in 37 percent of simple and advanced horticultural societies and 67 percent of intensive agricultural societies.

Davis also drew on Anthony Wallace's (1966) notion of "cult institutions" to examine the relationship between technological evolution and religion. According to Wallace, "a cult institution may be defined as a set of rituals all having the same general goal, all explicitly rationalized by a set of similar or related beliefs, and all supported by the same social group" (1966:75). Wallace delineated four types of cult institutions: (1) individualistic, in which individual persons perform their own private rituals; (2) shamanic, in which a part-time religious practitioner (a shaman) performs special rites for others in return for a fee; (3) communal, in which bodies of laypersons collectively perform calendrical and other religious rites; and (4) ecclesiastical, in which there are full-time priests who perform highly specialized rituals before audiences of laypersons. These cult institutions represent a typology of religious evolution.

Davis used three primary variables to identify the kinds of religious practices that mark each cult institution: (1) the Degree of Religious Organization, (2) the Type of Religious Functionary, and (3) the Periodicity of Religious Rituals. The stage of technological development and the Degree of Religious Organization were positively related. As societies moved from the hunter-gatherer level all the way to the intensive agricultural level, they were increasingly likely to have, first, specialized religious organizations that were community wide and, then, specialized religious organizations that were society wide. The Type of Religious Functionary was also related to the level of technological development. With technological evolution, there was a steady decline in reliance on shamans and a gradual increase in the presence of lay organizations and professional priesthoods. Concerning the Periodicity of Religious Rituals (calendrical rites), this too had a strong evolutionary dimension. With technological evolution, calendrical rites were not only more likely to be present but there was likely to be a greater variety and diversity of such rites.

#### **A Marxian Perspective: Underhill and Economic Complexity**

Underhill (1975) sought to understand religious evolution from a Marxian rather than a Durkheimian perspective. Underhill followed the Marxian argument that the economic base and productive forces of a society are the primary determinants of the superstructure and, thus, that religion, as part of the superstructure, will be a reflection of the material conditions of social life.

However, Underhill recognized that "economy" for Karl Marx and Frederick Engels was always "political economy" and, thus, that politics are also involved in shaping the nature of religion. Therefore, Underhill sought to assess the relative roles of politics and economics in religious evolution. In his empirical analysis, Underhill used George Murdock's (1967a, 1967b) *Ethnographic Atlas* with its 1,267 preindustrial societies. Underhill's dependent variable was called simply Monotheism, which was operationalized by noting whether a high god was present or absent in the sampled societies. The independent variables were the levels of economic and political complexity.

Underhill found a strong zero-order relationship ( $\gamma = .63$ ) between Economic Complexity and Monotheism and a similarly strong zero-order relationship ( $\gamma = .56$ ) between Political Complexity and Monotheism. Controlling for Political Complexity, Underhill found that most of the correlation between Economic Complexity and Monotheism remained (partial  $\gamma = .44$ ). But when Economic Complexity was partialled out of the relationship between Political Complexity and Monotheism, the relationship dropped to a  $\gamma$  of .28. In concluding that his findings supported the Marxian perspective, Underhill asked how economic systems influence the emergence of monotheism. He suggested that economically complex

societies have the resources needed to maintain the kinds of religious specialists necessary for control of the masses.

### ***Irons's Marxian Stratification Perspective***

William Irons (1991) has developed an alternative Marxian hypothesis that focuses more on the Marxian notion of the class struggle as the engine of historical change. Irons's theory can be described as a "Marxian stratification" explanation, and it assumes that a moral high god emerges in stratified societies as a way to sedate the masses while preserving the privileges of powerful elites. This hypothesis has not fared well. It has been tested by Roes (1995) using the *Ethnographic Atlas*. Roes found only a weak correlation (Pearson  $r = .24$ ) between class stratification and the presence of high gods. Moreover, when the effects of societal size were controlled, the relationship was for the most part diminished even further.

### ***Alexander's Societal Size Hypothesis***

Richard Alexander (1987) has offered the hypothesis that the evolution of religion is primarily determined by increases in the size of societies. His theory assumes that as societies increase in size they encounter new problems in terms of unifying very large numbers of people, and thus religion, in the form of moral rules, serves as a major means of this unification. This hypothesis has been tested by Roes (1995) and more recently by Roes and Raymond (2003). Using the *Ethnographic Atlas*, Roes (1995) found a Pearson  $r$  of .499 ( $N = 427, p < .001$ ) between societal size and high gods. When the effect of stratification was partialled out, the relationship remained significant. In the Roes and Raymond (2003) study, the authors' dependent variable was a simple dichotomous distinction between the presence of high gods supportive of human morality and the presence of high gods not supportive of human morality. The Alexander hypothesis was supported, but the correlations, although statistically significant, were modest in strength (Kendall's tau in *Ethnographic Atlas* = .37, in *Standard Cross-Cultural Sample* = .29). However, it can be questioned whether the Roes and Raymond study was a true test of the Alexander hypothesis, because the authors operationalized societal size in terms of the number of levels of jurisdictional hierarchy a society possessed, which is by no means the same thing as size.

### ***Testing All Five Hypotheses Head to Head***

Previous research thus shows that all five of the major hypotheses that have guided quantitative research on the comparative study of religion have at least some degree of empirical support. Yet, based on the research thus far, it is difficult to choose among these hypotheses on empirical grounds because all of the studies are deficient in one way or another. Most significantly, in the majority of cases, the studies tested a single hypothesis or a set of hypotheses drawn from a single perspective. With one or two excep-

tions, competing hypotheses were not tested against one another. For this to have been done, appropriate statistical controls would have had to be introduced and multivariate analyses employed. This has not been the case. In addition, the studies have used a range of cross-cultural samples, and in two instances the samples were very small. The end result is a high level of inconclusiveness. The present study attempts to bring order to this confusion by testing all five hypotheses directly against each other. This head-to-head testing is carried out by means of multiple regression techniques. We also employ what some cross-cultural researchers claim is the best sample available for cross-cultural analyses. As a further innovation, we introduce a new measure of religious beliefs and practices that we believe is a better measure than High Gods of actual religious evolution, which is our primary concern in this study.

## **METHODS**

### ***Data***

The present study uses the *Standard Cross-Cultural Sample* (SCCS) devised by Murdock and Douglas White (1969), a sample that was created as a way of dealing with the methodological issue known as "Galton's Problem." Galton's Problem notes that a major difficulty with cross-cultural sampling is the possibility of cultural diffusion between neighboring societies. Cultural diffusion creates sampling error by reducing the scope of natural cultural variation between societies. Murdock and White dealt with this problem by dividing the world into 168 distinctive cultural and linguistic areas and then nonrandomly selecting one society from each. The SCCS is a purposive sample, as the society chosen from each area was the one deemed to be most reliably and thoroughly described by ethnographic data. Although the SCCS is considerably smaller than the *Ethnographic Atlas*, the fact that it minimizes Galton's Problem makes it a better sample. And, although it is not a truly random sample, its formulators contend that it is a representative sample of the world's preindustrial societies.

### ***Dependent Variables***

All previous studies of the evolution of religion have used High Gods (or a slight variation) as their primary dependent variable. To evaluate previous hypotheses in the kind of head-to-head test that we are proposing, it is essential that we use the same operationalized dependent variable as previous researchers. Therefore, in the present study, we used High Gods (hereafter HG) as a dependent variable and coded it (1) absent or unreported, (2) present but not active in human affairs, (3) present and active in human affairs but not concerned with human morality, and (4) present, active in human affairs, and concerned with human morality. However, because of our concerns about the adequacy of HG as a measure of overall religious evolution and so that we might broaden the scope of our study, we created an additional dependent variable called Stage of Religious

Evolution (SRE), as defined and operationalized by Wallace (1966). In employing this new dependent variable, we see no reason why we should not be guided by the same hypotheses that were used in the case of HG and, therefore, no reason why those hypotheses cannot be tested head-to-head in the context of our broadened conception of religious evolution.

As a measure of religious evolution, the High Gods variable is rather limited. In fact, it was never really intended by Swanson as a measure of long-term religious evolution at all. But if we were to consider it as such a measure, there would be two serious problems. First, in Swanson's original formulation, he equated the presence of high gods with monotheism, noting that small preliterate societies often had a single god that they considered the creator of the universe. However, there is a very large difference between such a high god and the omnipresent, omniscient, and omnipotent gods characteristic of the major world religions that began to emerge some 2,500 years ago. Even Swanson himself recognized that the high gods of simpler societies were frequently very different from the high gods of the great world salvationist monotheistic religions. For example, these creator gods were often not the object of worship or even reverence, in striking contrast to the high gods of monotheism, and in the majority of cases they were not active in human affairs. Moreover, restricting the study of religious evolution to the social origins of high gods is troublesome because religion is a multifaceted phenomenon that includes practices as well as beliefs, and some would argue that it is practices that are more important. The High Gods variable says nothing about religious organizations, personnel, and practices. For a complete analysis of a society's religious forms, it is important to understand how that society's religious practices are socially organized. Hence, although some might consider High Gods to fit into a somewhat useful evolutionary scheme, our view is that it does not go nearly far enough.

Wallace formulated an evolutionary typology of religious stages that he called Shamanic, Communal, Olympian, and Monotheistic. Each religious stage is a combination of the cult institutions discussed earlier. Shamanic religions contain only individualistic and shamanic cult institutions; religious practice focuses solely on the conduct of a shaman and there are no calendrical rites. Communal religions contain individualistic, shamanic, and communal cult institutions, and much religious practice focuses on the conduct of laypersons engaged in collective calendrical and other rites. Olympian religions (hereafter called Polytheistic) contain all four cult institutions, especially specialized priesthoods; numerous gods, usually organized in a hierarchical pantheon, are worshiped; and worship is led by full-time priests. Monotheistic religions are like Polytheistic religions, except that worship focuses on a single god, rather than a pantheon of specialized gods. Stage of Religious Evolution is regarded as an ordinal variable.<sup>1</sup>

To create SRE, research was done that examined various religious dimensions of the SCCS societies (this information

was unavailable in the SCCS at the time we began our research). We drew on three sources for this research: the *Encyclopedia of World Cultures* ([EWC]; O'Leary and Levinson 1990), the Human Relations Area Files (HRAF), and various individual ethnographies. The EWC includes full descriptions of many of the societies contained within the SCCS, and thus we took full descriptions of the available societies' religions from it. It was consulted first and most of our data came from it. If data on a particular society were not available in the EWC, the microfiche version of HRAF was consulted next. When using the HRAF, the junior author took notes on the 18 categories of religious belief and practice coded in the HRAF's *Outline of Cultural Materials* (HRAF codes 771–789). If information could not be found in either the EWC or HRAF, individual ethnographies were consulted. Of the 186 societies in the SCCS, adequate information on the religious beliefs and practices of ten societies could not be found. In addition, there were eight societies that we considered too missionized to provide reliable information concerning their original religious practices. These 18 societies were therefore excluded, leaving us with a final N of 168.

SRE was created based on the information contained in the notes taken from each resource. Each society in the SCCS was placed into one of Wallace's four stages. To assure coding reliability, all 168 societies were coded independently by the senior and junior authors. The variable was coded as (1) Shamanic, (2) Communal, (3) Polytheistic, and (4) Monotheistic. We were guided by the following assumptions. A religion is Shamanic when a shaman is the center of most religious practice, a strong belief in animism is present, there are no calendrical rites, and laypersons rely on a shaman as the sole intermediary between themselves and the supernatural. A religion is Communal when laypersons are the center of religious practice and calendrical or other collective rites of some sort are present; although a shaman may be present, there are groups (e.g., kinship groups, age grades, or the whole society) that specialize in acting as a mediator between the people and the supernatural. A religion is Polytheistic when a hierarchically organized priestly class is present to direct laypersons in ritual practices, and the center of worship is a pantheon of distinct gods. Finally, a religion is Monotheistic when a hierarchical priestly class is present to direct laypersons in ritual practices, but there is a belief in a single, all-powerful god, rather than a pantheon of specialized and lesser gods. Therefore, as we coded the gathered data, we concentrated on determining the primary practitioners of each society, the presence or absence of collective rites, and the types of supernatural beings present. A very high degree of interrater reliability was obtained (Pearson  $r = .94$ ,  $\kappa = .792$ ). After arriving at the two independent codings, we then looked at the discrepant codes, reevaluated them, and arrived at a mutually agreed-on code. These final codes are given in Appendix A. The frequency distribution of the religious types was Shamanic = 30, Communal = 89, Polytheistic = 12, and Monotheistic = 37.

### Independent Variables

The main independent variables were already coded in the SCCS. They and their codes are as follows:

Sovereign Groups (*a.* number of jurisdictional levels beyond the local community: 1 = none; 2 = one level; 3 = two levels; 4 = three or more levels); (*b.* number of jurisdictional levels within the local community: 1 = two levels; 2 = three levels; 3 = four or more levels); these variables are not identical to Swanson's original measure, but they are very similar and in any event are the closest approximations in the SCCS that are available. (*Original source of codes:* Tuden and Marshall 1972.)

Writing and Records (1 = none; 2 = mnemonic devices; 3 = nonwritten records; 4 = true writing but no records; 5 = true writing with records). (*Original source of codes:* Murdock and Provost 1971.)

Technological Specialization (1 = none; 2 = pottery only; 3 = loom weaving only; 4 = metalworking only; 5 = smiths/weavers/potters). (*Original source of codes:* Murdock and Provost 1971.)

Subsistence Economy (1 = foraging; 2 = shifting cultivation with digging sticks; 3 = shifting cultivation with metal hoes; 4 = intensive agriculture without the plow; 5 = intensive agriculture with the plow; 6 = pastoralism). (*Original source of codes:* Murdock and Morrow 1970.)

Stage of Political Evolution (1 = band or tribe; 2 = small chiefdom; 3 = larger chiefdom; 4 = small state; 5 = larger state). (*Original source of codes:* Tuden and Marshall 1972.)

Class Stratification (1 = egalitarian; 2 = wealth distinctions only; 3 = elite or dual; 4 = complex). (*Original source of codes:* Murdock and Provost 1971.)

Societal Size (total population with the following categories: 1 = 10–99; 2 = 100–999; 3 = 1,000–9,999; 4 = 10,000–99,999; 5 = 100,000–999,999; 6 = 1,000,000–9,999,999; 7 = 10,000,000–99,999,999; 8 = 100,000,000 or more). (*Original data source:* White 1988.)

Five of these variables are designed to directly test the five hypotheses discussed above. However, we decided to add two more variables, Writing and Records and Technological Specialization, because these are important dimensions of social evolution and we were curious to see if they would have any explanatory power. All of these variables are ordinal in scale.

### Data Analysis

To produce a fair test of Swanson's sovereign groups hypothesis, we collapsed the four categories within the High Gods measure into two—high gods absent and high gods present—because this is the way Swanson did his test. For

this analysis, we performed binary logistic regression. However, we then extended Swanson's analysis to look at all four categories of the High Gods variable, as indicated below.

Because all of our variables were ordinal rather than interval, we performed ordered logistic regression analyses to estimate the zero-order and partial effects of the predictors on the dependent variable. Ordered logistic regression (Long 1997) expresses the effects of independent variables on the cumulative generalized log-odds of the dependent variable. That is, they show effects on the probability that a case falls in the next highest category of the dependent variable. Like Ordinary Least Squares regression (OLS), results can be presented in the form of unstandardized and standardized beta coefficients and accompanying tests of significance. These analyses were supplemented by several cross-tabulations to identify where the most critical evolutionary breaks occurred.

## RESULTS

### Results: High Gods

Table 1 shows the results of the binary logistic regression analysis for HG as a dichotomous variable. In this analysis, we included only the five independent variables that have been used in previous research to sort out which of these variables has the most predictive power. Only one variable, Sovereign Groups, was predictive, and its predictive power was weak ( $p < .10$ ,  $R^2 = .144$ ). We then repeated the analysis but added the two variables that had not been employed in previous research, Writing and Records and Technological Specialization (see Table 2). As can be seen, the results were essentially the same. Sovereign Groups was the only predictor but again only at the .10 level (and  $R^2 = .155$ ). Thus, the original Swanson hypothesis holds up against its competitors, albeit weakly, when more rigorous multivariate testing missing in previous research is carried out.

Swanson concentrated only on the mere presence or absence of high gods, but we thought it useful to perform a regression analysis involving the seven independent variables and all four categories of HG because several studies have used all of these categories. Here the only statistically

**TABLE 1.** Binary Logistic Regression of High Gods on Five Independent Variables.

| Variable                     | Zero order | Estimate (SE) | Standardized estimate |
|------------------------------|------------|---------------|-----------------------|
| Sovereign groups             | .274       | .446 (.259)*  | .548                  |
| Subsistence economy          | .396       | .129 (.193)   | .200                  |
| Stage of political evolution | .269       | .226 (.286)   | .292                  |
| Class stratification         | .210       | -.373 (.261)  | -.402                 |
| Societal size                | .339       | .019 (.230)   | .028                  |

\*Wald chi-square  $p < .10$ ; Pseudo  $R^2 = .144$ ;  $N = 134$ . The standardized estimate is the approximate equivalent of the standardized beta coefficient in OLS regression, allowing direct comparisons of the relative effects of the independent variables. It was obtained by multiplying a variable's unstandardized coefficient by its standard deviation.

**TABLE 2.** Binary Logistic Regression of High Gods on Seven Independent Variables.

| Variable                     | Zero order | Estimate (SE) | Standardized estimate |
|------------------------------|------------|---------------|-----------------------|
| Sovereign groups             | .274       | .427 (.264)*  | .524                  |
| Writing & records            | .417       | -.206 (.195)  | -.302                 |
| Technological specialization | .335       | -.073 (.221)  | -.103                 |
| Subsistence economy          | .396       | .226 (.228)   | .350                  |
| Stage of political evolution | .269       | .323 (.306)   | .417                  |
| Class stratification         | .210       | -.294 (.270)  | -.316                 |
| Societal size                | .339       | .011 (.242)   | .016                  |

\*Wald chi-square  $p < .10$ ; Pseudo  $R^2 = .155$ ;  $N = 134$ . The standardized estimate is the approximate equivalent of the standardized beta coefficient in OLS regression, allowing direct comparisons of the relative effects of the independent variables. It was obtained by multiplying a variable's unstandardized coefficient by its standard deviation.

significant predictor of HG was Writing and Records (results not shown). HG, however, does approach significance (actual  $p = .116$ ). These results, of course, cannot be considered an actual replication of Swanson's empirical tests, but they are interesting nonetheless and his hypothesis does not fare badly even here.

### Results: Stage of Religious Evolution

Table 3 presents the results for SRE. These results are much stronger, with 66 percent of the total variance being explained compared to 16 percent in the case of HG and three of the hypotheses are supported.

Looking at the hypotheses one by one, we see the following results:

*Hypothesis 1, Sovereign Groups:* Although our first measure of Sovereign Groups was substantially correlated with SRE at the zero-order level ( $r = .534$ ), the relationship disappeared when the other independent variables were controlled (Wald  $\chi^2 p = .303$ ). Therefore, this hypothesis is not supported. Our second measure of Sovereign Groups, number of jurisdictional levels within the local community, did

**TABLE 3.** Ordered Logistic Regression of Stage of Religious Evolution on Seven Independent Variables.

| Variable                     | Zero order | Estimate (SE)  | Standardized estimate |
|------------------------------|------------|----------------|-----------------------|
| Sovereign groups             | .534       | .257 (.250)    | .316                  |
| Writing & records            | .704       | .678 (.197)*** | .994                  |
| Technological specialization | .492       | -.257 (.214)   | -.363                 |
| Subsistence economy          | .662       | .687 (.237)**  | 1.063                 |
| Stage of political evolution | .662       | .280 (.294)    | .362                  |
| Class stratification         | .513       | -.155 (.263)   | -.167                 |
| Societal size                | .649       | .525 (.254)*   | .765                  |

\*Wald chi-square  $p < .05$ ; \*\*Wald chi-square  $p < .01$ ; \*\*\*Wald chi-square  $p < .001$ ; Pseudo  $R^2 = .659$ ;  $N = 136$ . The standardized estimate is the approximate equivalent of the standardized beta coefficient in OLS regression, allowing direct comparisons of the relative effects of the independent variables. It was obtained by multiplying a variable's unstandardized coefficient by its standard deviation.

not exist in the SCCS but was available in the full *Ethnographic Atlas* (Murdock 1967b). However, its zero-order correlation was weak ( $r = .190$ ) and substantially lower than the zero-order correlation of the first measure in the EA data bank ( $r = .376$ ). Because of the low correlation, we found it unnecessary to perform a regression analysis using the second measure.

*Hypothesis 2, Subsistence Technology, and Hypothesis 3, Economic Complexity:* Both of these hypotheses are supported inasmuch as Subsistence Economy was a statistically significant predictor of SRE.

*Hypothesis 4, Stratification:* As in the case of the first hypothesis, stratification was substantially correlated at the zero-order level with SRE ( $r = .513$ ), but this relationship washed out in the regression analysis.

*Hypothesis 5, Societal Size:* This hypothesis was supported. As predicted by Alexander, the larger a society's total population is, the more likely it is to have achieved an advanced stage of religious evolution.<sup>2</sup>

As in the case of HG, Writing and Records was a statistically significant predictor; in fact, it was the strongest predictor of all.

Some readers might question whether the independent variables are truly independent of SRE, because all of these measures are assessing the overall structure of a society. This is true, of course, but SRE is specifically assessing the types of religious beliefs, practices, and ritual specialists found in a society, and these indeed are quite different from such things as the level of technological specialization or the degree of class stratification. All of these variables have been independently conceptualized and operationalized.

### LONG-TERM RELIGIOUS EVOLUTION

One of our most important findings is the much larger proportion of the variance explained in the results using SRE compared to HG. One interpretation of this finding is that SRE is a much more sensitive measure. However, an equally valid (and perhaps even more valid) interpretation is that the two dependent variables are in fact measuring different things. HG as conceived by Swanson was not really intended by him as a measure of religious evolution. Rather, Swanson was concerned with a particular type of religious belief, the presence or absence of high gods, at any level of social evolution. Because the concern of this study is long-term religious evolution, the SRE concept is obviously more appropriate, which is why we concentrate on it.

Returning then to the findings for SRE, what do we conclude? An interesting and coherent story emerges. Long-term religious evolution appears to be the joint product of three major evolutionary forces, each of which exerts its own effect independent of the others. It appears that societies move to later stages of religious evolution primarily when their populations become large, when they advance their level of subsistence technology, and when they acquire writing and record keeping. But how, exactly, do these factors exert their effects? To answer this question, we

**TABLE 4.** Stage of Religious Evolution and Subsistence Economy.

| Stage of religious evolution | Subsistence economy   |                                      |                                  |                                    |                                 | Pastoralism |
|------------------------------|-----------------------|--------------------------------------|----------------------------------|------------------------------------|---------------------------------|-------------|
|                              | Hunting and gathering | Shifting cultivation: digging sticks | Shifting cultivation: metal hoes | Intensive agriculture without plow | Intensive agriculture with plow |             |
| Shamanic                     | 18 (62%)              | 4 (14%)                              | 1 (3%)                           |                                    |                                 |             |
| Communal                     | 19 (24%)              | 24 (31%)                             | 13 (17%)                         | 12 (15%)                           | 5 (6%)                          | 5 (6%)      |
| Polytheistic                 | 1 (9%)                | 1 (9%)                               | 3 (27%)                          | 3 (27%)                            | 3 (27%)                         | 0 (0%)      |
| Monotheistic                 | 1 (3%)                | 0 (0%)                               | 0 (0%)                           | 3 (8%)                             | 25 (68%)                        | 8 (22%)     |

conducted a series of cross-tabulations, the results of which are summarized in Tables 4–6.

Table 4 cross-tabulates SRE with Subsistence Economy. In the case of Shamanic religions, the majority (62 percent) are found in foraging societies. Communal religions, by contrast, are most common in extensive agricultural societies (48 percent). Because many of the communal rituals found in these religions concern agricultural and seasonal cycles, this seems as it should be. Many Polytheistic religions (36 percent) are found in extensive agricultural (horticultural) societies but over half (54 percent) are found in societies with intensive agriculture. In the case of Monotheistic religions, the vast majority (76 percent) are found in intensive agricultural societies, most of which have the most intensive form of agriculture: that is, plow agriculture. Nearly all the rest (22 percent) are located in pastoral societies. These data suggest that, although Polytheistic religions by no means require intensive agriculture, such agriculture nevertheless predisposes toward this type of religion. They also suggest that economic complexity, in the form of intensive agriculture or pastoralism, is a virtual necessity for Monotheistic religions. Why should economic complexity be so important to the development of ecclesiastical, and especially Monotheistic, religions? The answer, we think, is that it is necessary to produce economic surpluses large enough to support a full-time class of professional priests. Something like this was implied in Underhill’s original argument, and it is certainly basic to Davis’s hypothesis.

In Table 5, SRE is cross-tabulated with Writing and Records. Here we see that the vast majority of Shamanic religions (90 percent) are found in societies where there is no writing or any record keeping. Much the same is true for Communal religions, 93 percent of which are found in nonliterate societies. Two-thirds of Polytheistic societies

are also nonliterate, although the remaining one-third have both true writing and records. The big shift occurs with the Monotheistic religions, 87 percent of which are found in literate societies. This finding corresponds to Walter Ong’s point that writing has made “possible the great introspective religious traditions such as Buddhism, Judaism, Christianity, and Islam. All these have sacred texts” (1982:104). But what exactly is the nature of the connection between literacy and Monotheistic religion? Ong’s point is that writing makes sacred texts possible; this is indeed true, but writing also leads to profound changes in religious practices and the nature of religious personnel.

Jack Goody (1986), a leading anthropological student of the evolution of literacy and its social significance, suggests that with the advent of the written word a specialist priest class formed. Likewise, the cognitive psychologist and anthropologist Pascal Boyer explains that literacy allowed for “stable associations of religious specialists [that] were transformed into an organized social group akin to a corporation or guild” (2001:275). Perhaps most critically, writing was necessary to a specialized priesthood’s ability to achieve a monopoly over religious knowledge. The written word allowed for a “standardization” of religious belief and ritual. Writing down prayers and rituals ensures that they will be practiced in a similar way each time. According to Boyer, “in order to offer a unique set of religious services *and* a stable one from one religious specialist to the next, a [religious] guild requires a description of what it offers” (2001:277–278, emphasis in original), and he adds that “literate guilds promote *texts* as a source of guaranteed truths” (2001:278). Moreover, Goody points out that, because ritual texts tend to become increasingly complex and elaborate over time, they “may become mumbo-jumbo to the populace, requiring a specialist body of interpreters to ‘translate’ . . . the words addressed to the deity” (1986:39).

**TABLE 5.** Stage of Religious Evolution and Writing and Records.

| Stage of religious evolution | Writing and records |                  |                    |                             |                          |
|------------------------------|---------------------|------------------|--------------------|-----------------------------|--------------------------|
|                              | None                | Mnemonic devices | Nonwritten records | True writing but no records | True writing and records |
| Shamanic                     | 13 (43%)            | 14 (47%)         | 3 (10%)            | 0 (0%)                      | 0 (0%)                   |
| Communal                     | 43 (48%)            | 29 (33%)         | 11 (12%)           | 5 (6%)                      | 1 (1%)                   |
| Polytheistic                 | 3 (25%)             | 1 (8%)           | 4 (33%)            | 0 (0%)                      | 4 (33%)                  |
| Monotheistic                 | 2 (5%)              | 1 (3%)           | 2 (5%)             | 7 (19%)                     | 25 (68%)                 |

TABLE 6. Stage of Religious Evolution and Societal Size.

| Stage of religious evolution | Societal size |          |             |               |                 |                     |                       |                     |
|------------------------------|---------------|----------|-------------|---------------|-----------------|---------------------|-----------------------|---------------------|
|                              | 10–99         | 100–999  | 1,000–9,999 | 10,000–99,999 | 100,000–999,999 | 1,000,000–9,999,999 | 10,000,000–99,999,999 | 100,000,000 or more |
| Shamanic                     | 0 (0%)        | 9 (30%)  | 12 (40%)    | 6 (20%)       | 3 (10%)         | 0 (0%)              | 0 (0%)                | 0 (0%)              |
| Communal                     | 1 (1%)        | 10 (11%) | 37 (42%)    | 16 (18%)      | 21 (24%)        | 4 (5%)              | 0 (0%)                | 0 (0%)              |
| Polytheistic                 | 0 (0%)        | 1 (8%)   | 1 (8%)      | 2 (17%)       | 5 (42%)         | 3 (25%)             | 0 (0%)                | 0 (0%)              |
| Monotheistic                 | 0 (0%)        | 0 (0%)   | 0 (0%)      | 7 (19%)       | 7 (19%)         | 12 (32%)            | 9 (24%)               | 2 (5%)              |

Hence the written word establishes the authority of both the priestly class and its religious tradition (Boyer 2001), giving priests a great deal of power. Likewise, Henri-Jean Martin explains that “initially an instrument of power in the hands of small groups of priests, soothsayers, and scribes serving a deified monarch, writing was above all a means to domination” (1994:27). This power in the hands of a religious elite finds no counterpart in the simpler oral religions. Indeed, it is clearly the establishment of written dogma that allowed complex religions to emerge and grow. Goody also indicates that the written word helps to make religion a “universalizing” force, and Boyer notes that writing is especially important in establishing moral codes for the laity and converting the members of other religions.

It is clear, however, that the arguments of Goody, Boyer, and Martin apply mainly to Monotheistic priest-hoods, because only a minority of Polytheistic societies have true writing. Writing seems to be a virtual necessity for the development of Monotheistic priest-hoods, and the reason is in all likelihood the much greater doctrinal elaboration of Monotheistic religions and, perhaps, the greater priestly monopolization of religious knowledge. Or at least this would seem to be the case for an endogenous evolution of monotheism—that is, absent some sort of diffusion or conquest. (For example, of the five nonliterate Monotheistic societies in the SCCS, three—the Bambara, Fulani, and Hausa—are West African societies that became monotheistic as the result of Muslim conquest.)

What then of the role of Societal Size? Table 6 shows the cross-tabulation of SRE and this variable. The critical demographic threshold for the emergence of Monotheism seems to be one million people contained within a single society. Approximately a third (32 percent) of Monotheistic societies contain between one million and ten million members, and another 24 percent between ten million and 100 million members. Two of 30 Monotheistic societies, or five percent, contain in excess of 100 million members. Thus, 61 percent of Monotheistic societies contain a million members or more. Is Alexander’s explanation of the importance of large populations—the need to provide a set of doctrines and moral rules that can unify very large numbers of people—the correct way to understand the Monotheism–Societal Size relationship? It is possible, for example, that the importance of large numbers is because of the psychologically negative effects of high-density urban living, which would create a need for new gods of great power and

scope (Stark 1996; Stark and Bainbridge 1987). We tested for this possibility by substituting measures of community size and population density for total population in our regression analyses, but these variables were not statistically significant predictors. Alexander’s interpretation, therefore, may well be correct, although the issue warrants further study.

#### EARLIER RELIGIOUS TRANSITIONS AND THE DRIVING FORCES OF RELIGIOUS EVOLUTION

Much of the preceding discussion has emphasized the transition to ecclesiastical religions, especially Monotheistic religions, and has not paid sufficient attention to earlier religious transitions. First, let us consider the transition from Shamanic to Communal religions. To analyze this transition, we conducted a separate regression analysis (not shown) in which Polytheistic and Monotheistic societies were eliminated from the analysis. In this analysis, only Subsistence Economy was a significant predictor ( $p < .05$ ) and 27 percent of the variance was explained. Writing could not be important because the vast majority of societies with Shamanic and Communal religions (95 percent) have no writing. And the reason Societal Size is not a significant predictor is probably because populations have not yet become large enough: 70 percent of Shamanic and 53 percent of Communal religions are found in societies with fewer than 10,000 members, and only 28 percent of Communal religions are found in societies numbering 100,000 or more (see Table 6). The importance of Subsistence Economy is primarily a matter of the transition from hunter-gatherer to horticultural societies. Nearly two-thirds (62 percent) of Shamanic religions are found among hunter-gatherers compared to only 24 percent of Communal religions. By contrast, only 17 percent of Shamanic religions are found in extensive agricultural societies but 48 percent of Communal religions are (see Table 4). The shift from hunting and gathering to horticulture, then, is associated with a marked decline in the prevalence of Shamanic religions and their replacement by Communal religions.

Michael Winkelman (1990, 2000) has undertaken cross-cultural analyses of shamans and their transformation into slightly different types of religious practitioners that he calls shaman–healers and healers. Shamans as conceptualized by Winkelman are part-time specialists who engage in healing and divination, hunting magic, and vision quests.



According to Winkelman, classic shamans are found only in hunter-gatherer societies, and with the transition to agriculture they evolve into shaman–healers and healers. The major difference between shamans and shaman–healers appears to be that shamans engage in individualistic practices, whereas shaman–healers’ practices are collective or group oriented. Healers are distinguished from shaman–healers in that healers are usually full-time rather than part-time practitioners. Winkelman’s conceptualizations are compatible with Wallace’s and overlap them. The major difference is that Wallace’s conception of communal religious practices is somewhat broader in including rituals devoted to more than just healing and divination.

How does the shift to horticulture bring about a shift from Shamanic to Communal religions? Some of the most important rituals in Communal religions are collective agricultural rites. Mircea Eliade (2004) points out that in agricultural societies the rhythm of the seasons is of great importance and is thus given religious significance. “Because farming communities are thus bound up with the closed cycles of time,” he explains, “a great many ceremonies connected with the driving out of ‘the old year’ and the coming of the ‘new year,’ the driving out of ‘ills’ and the regeneration of ‘powers,’ are always found interwoven with the rites of agriculture” (Eliade 2004:331). Eliade goes on to note that agricultural rites are “intended to assist the growth of cereals and hallow the work of the farmer” (2004:332). The agricultural rites of Communal religions, in other words, relate to the anxieties that inevitably accompany the precariousness of agriculture. One is reminded here of Bronislaw Malinowski’s (1961) famous observation that the Trobriand Islanders practiced fishing magic only when they engaged in deep-sea fishing, rather than fishing in shallow waters; the former was much more dangerous and thus riven with anxiety. In horticultural societies, new kinds of anxieties arise that are not found in hunter-gatherer societies, and these new anxieties seem to call forth new kinds of religious practices designed to alleviate them.

An additional regression analysis (not shown) explored the transition from Shamanic to Communal to Polytheistic religions. Subsistence Economy was once again the only important predictor ( $p < .05$ ), and 37 percent of the variance was explained. Writing was not important, which is unsurprising considering that even the majority of Polytheistic societies (67 percent) do not yet have writing (see Table 5). And societies are apparently still not large enough for Societal Size to make a difference: 75 percent of Polytheistic societies have fewer than one million members (see Table 6). The Communal to Polytheistic shift seems to be primarily determined—that is, made possible—by the intensification of agriculture. Only 22 percent of Communal religions are found in societies with intensive agriculture, but 54 percent of societies with Polytheistic religions are intensive agriculturalists (see Table 4).

But if agricultural intensification makes the transition to Polytheistic religions possible, why in particular Polythe-

ism? Here we see two fundamental things happening. First, there is the elevation of the numerous spirits and deities found in Shamanic and Communal religions to a higher and more powerful status. Second, priests emerge to become the interpreters of the nature and actions of these elevated deities. These priests are either closely allied with secular political rulers or are the political rulers themselves. Gods and their priestly intermediaries play an important role in legitimating and reinforcing the power of the state, which is why the Polytheistic religions are often called state religions. With new forms of political life come new forms of religious life. It is important to recognize that the Polytheistic gods, priests, and associated rituals are largely confined to ruling elites. The great mass of the common people usually have little or no involvement in such activities; rather, they have their own separate beliefs and practices that are much the same as those found in Communal religions (cf. Johnston 2004:423–437).

The transition all the way to Monotheistic societies takes the full combination of changes in Subsistence Economy, Writing and Records, and Societal Size. Our impression is that the transition to Monotheistic religions was the “great leap forward” in religious terms; it was the point at which the most dramatic changes occurred. Both intensive agriculture and writing and records were crucial prerequisites of the formation of Monotheistic religions: the former because it provided the necessary economic surplus to produce a class of full-time, highly specialized priests and the latter because elaborate religious doctrines had to be written down to be transmitted successfully across the generations. But there was more going on than this. The Monotheistic religions supplanted the Polytheistic religions throughout the world in a remarkably short period of time, the so-called Axial Age, which is usually dated from around 600 B.C.E. to C.E. 1 (Eisenstadt 1986; Jaspers 1953). The major new development in terms of beliefs was the elevation of a single god to supreme status, a transcendent entity with few or no human traits and desires (such as were characteristic of the old Polytheistic gods). There was also a great emphasis given to salvation, release from suffering, and God’s compassion. A number of scholars have offered explanations of the Monotheistic great leap forward (e.g., Collins 1974; Harris 1977; Stark and Bainbridge 1987; Weber 1978), but no real consensus has emerged as to what the best explanations are. One of us has suggested that the new religious doctrines emerged to deal with the heightened sense of ontological insecurity produced by major increases in the highly disruptive consequences of rapid urbanization and intensified warfare (Sanderson 2008). However, this argument is still quite tentative, and much more research remains to be done.

As for the increased importance of priests as monopolizers of religious doctrines, as suggested earlier in our view this was a logical consequence of a class of religious specialists seeking greater power and influence. Our view of society is a conflict view (Collins 1975, 2009), or one in

which various groups, especially elites, are contending for power and influence and always seeking to extend the range of that power and influence. Mary Beard (2004) echoes the views of Goody, Boyer, and Martin discussed earlier in showing how writing was a critical element in this process. Much religious writing, Beard notes, involves obscurantism and “mumbo jumbo,” and such “intelligibility . . . could be an important defense of priestly or other expert religious power” (2004:132). The public display of obscure religious writing “was almost bound to enhance the authority of those who could claim to understand, while disadvantaging those who could not and were reliant on the interpretive skills of others” (Beard 2004:132). Priests already existed in the old Polytheistic state religions, but the extent of their knowledge and power was much less than that achieved by the priesthoods of the Monotheistic religions. Ultimately the Monotheistic priesthoods achieved enormous power, as illustrated by the Catholic Church in the Middle Ages, and writing contributed greatly to this.

As a coda to this discussion, we wish to emphasize that the processes of religious change that we have been describing and attempting to explain in this article are not just any of several types of change, but, rather, are specifically evolutionary change. The term *evolution* has been used in a variety of ways in the history of anthropology and sociology (Carneiro 2003; Sanderson 2007). One meaning is “descent with modification,” which is the classical biological meaning. Another is “a sequence of change that exhibits a directional pattern,” such as technological intensification or increasing complexity. We emphasize the second meaning in this article but in particular the version of it adumbrated by Robert Carneiro (1962, 1968). Carneiro contends that sociocultural evolution can be conceptualized as a sequence in which particular traits appear in a largely fixed order. He has adapted Guttman scalogram analysis and applied it to demonstrate that the ethnographic and archaeological record confirms this. For example, in human history and prehistory, social status differences generally appear before full-time craft specialists, which generally appear before economic markets, which in turn usually appear before legal codes. Carneiro shows, for example, that the Copper Eskimo have none of these traits, the Nuer only the first, the Tuareg only the first two, the ancient Hawaiians the first three, and the Incas, Assyrians, and Romans all four. As such, they can be arranged on an evolutionary continuum. This is precisely the conceptualization of religious evolution advanced by Wallace. Shamans appear first and the majority of preindustrial societies have them. Collective rites are added later, priests and polytheistic pantheons of powerful gods still later, and omnipotent and omniscient single gods still later. But in all of this religious evolution, the earlier religious beliefs and practices are for the most part retained. Returning to our ethnographic examples, the Copper Eskimo have only the first of these types of religious practitioners, the Nuer the first and second, and the Hawaiians, Incas, Assyrians, and Romans the first three. Thus, a great deal of religious change is an evolutionary process just

as much as technological, economic, and political change is.

## CONCLUSIONS

With this article, we make four novel contributions to the quantitative and cross-cultural study of religious evolution: (1) It uses what is probably the most representative cross-cultural sample; (2) it broadens the study of religious evolution by employing a new and, we think, more satisfactory measure of religious evolution; (3) it is the first such study to test previous hypotheses against each other in a head-to-head comparison using multivariate statistical techniques; and (4) it shows that a previously neglected variable, Writing and Records, is a crucial part of the process of religious evolution, at least at its most advanced stage. We have also offered some interpretations of the main driving forces in the transition from one evolutionary stage of religion to another. However, we still need a more fine-grained analysis than this study has been able to provide of the evolutionary transitions, especially of the transitions to Polytheistic and Monotheistic religions. This analysis must go beyond the quantitative results presented in this article to a detailed historical and ethnographic series of studies. The theoretical story of the evolution of religion in historical time remains to be told in the depth and detail that it deserves. Such analysis is the next step in our research.

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## NOTES

*Acknowledgments.* We are grateful to Jonathan Turner, Alexandra Maryanski, Christopher Chase-Dunn, and Steven Brint for substantive comments that helped improve this article, and especially to Robert Hanneman for help with the statistical analyses. We also thank three insightful AA reviewers for a number of very useful comments that helped improve the final draft of the article.

1. The only other typology of religious evolution of which we are aware is that of Robert Bellah (1964), who distinguishes five major types of religion: primitive, archaic, historic, early modern, and modern. Bellah's primitive type encompasses Wallace's Shamanic and Communal, the archaic type consists mostly of Polytheistic religions, and the historic type is the same as the Monotheistic. Bellah's early modern type refers to the religions that arose during the Protestant Reformation and the modern to the liberal humanistic religions of the 20th century. Because Bellah's latter two types of religion are obviously not represented in the SCCS, we chose Wallace's scheme over Bellah's.

2. The careful reader will have noted that in these regression analyses the sample size was reduced from 168 to 134/136. The main reason for this was that pastoral societies had to be eliminated from the subsistence economy measure, because there is no place to put them in without destroying the ordinality of that scale. However, in our cross-tabulational analyses these societies are retained. It should also be pointed out that in multiple regression analyses, the issue of multicollinearity—the correlations among the independent variables—is always important. In Ordinary Least Squares (OLS) regression, a measure of multicollinearity is available, but such is not the case with respect to Ordered Logistic regression. Therefore, we simply report the zero-order correlations among the independent variables as Appendix B. Inspection of

these correlations suggests that they are not high enough to have significantly influenced our findings.

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**Appendix A**  
**CODES FOR STAGE OF RELIGIOUS EVOLUTION**

Descriptive information used to code Stage of Religious Evolution was obtained from the following sources:

- *Encyclopedia of World Cultures* (EWC, vols. 1–9)
- Human Relations Area Files (HRAF)
- Miscellaneous ethnographies

| Society                | Stage of Religious Evolution | Data Source       |
|------------------------|------------------------------|-------------------|
| 1. Nama or Namaqua     | Shamanic                     | HRAF, FX13        |
| 2. !Kung               | Shamanic                     | EWC, vol. 9       |
| 3. Thonga or Bathonga  | Communal                     | EWC, vol. 9       |
| 4. Lozi or Barotse     | Communal                     | EWC, vol. 9       |
| 5. Mbundu or Ovimbundu | Communal                     | HRAF, FP13        |
| 6. Suku or Pindi       | Communal                     | EWC, vol. 9       |
| 7. Bemba or Awemba     | Communal                     | EWC, vol. 9       |
| 8. Nyakyusa            | Communal                     | EWC, vol. 9       |
| 9. Hadza or Kindiga    | Shamanic                     | Stephenson (2000) |
| 10. Luguru or Waluguru | Shamanic                     | Pels (1999)       |
| 11. Kikuyu or Akikuyu  | Communal                     | EWC, vol. 9       |
| 12. Ganda or Baganda   | Communal                     | EWC, vol. 9       |
| 13. Mbuti or Bambuti   | Communal                     | EWC, vol. 9       |
| 14. Nkundo Mongo       | Communal                     | EWC, vol. 9       |
| 15. Banen or Banyin    | N/A                          | N/A               |
| 16. Tiv or Munshi      | Communal                     | EWC, vol. 9       |
| 17. Ibo or Igbo        | Communal                     | EWC, vol. 9       |
| 18. Fon or Dahomeans   | Polytheistic                 | EWC, vol. 9       |
| 19. Ashanti            | Polytheistic                 | HRAF, FE12        |
| 20. Mende              | Communal                     | EWC, vol. 9       |
| 21. Wolof or Ouolof    | Communal                     | EWC, vol. 9       |
| 22. Bambara or Banmana | Monotheistic                 | HRAF, FA8         |
| 23. Tallensi           | Communal                     | HRAF, FE11        |
| 24. Songhai            | Communal                     | EWC, vol. 9       |
| 25. Fulani             | Monotheistic                 | EWC, vol. 9       |
| 26. Hausa              | Monotheistic                 | EWC, vol. 9       |
| 27. Massa or Bana      | Communal                     | EWC, vol. 9       |

| Society                     | Stage of Religious Evolution | Data Source     |
|-----------------------------|------------------------------|-----------------|
| 28. Azande or Niam-Niam     | Communal                     | EWC, vol. 9     |
| 29. Fur or For              | N/A                          | N/A             |
| 30. Otoro                   | N/A                          | N/A             |
| 31. Shilluk                 | Communal                     | EWC, vol. 9     |
| 32. Mao                     | N/A                          | N/A             |
| 33. Kafa or Kafficho        | N/A                          | N/A             |
| 34. Masai                   | Communal                     | EWC, vol. 9     |
| 35. Konso                   | Communal                     | EWC, vol. 9     |
| 36. Somali                  | Monotheistic                 | EWC, vol. 9     |
| 37. Amhara                  | Monotheistic                 | EWC, vol. 9     |
| 38. Bogo or Belen           | N/A                          | N/A             |
| 39. Nubians                 | Monotheistic                 | EWC, vol. 9     |
| 40. Teda                    | Monotheistic                 | EWC, vol. 9     |
| 41. Tuareg                  | Monotheistic                 | EWC, vol. 9     |
| 42. Riffians                | Monotheistic                 | EWC, vol. 9     |
| 43. Egyptians               | Monotheistic                 | HRAF, MR13      |
| 44. Hebrews                 | Monotheistic                 | EWC, vol. 1     |
| 45. Babylonians             | Polytheistic                 | N/A             |
| 46. Rwala                   | Monotheistic                 | HRAF, MD4       |
| 47. Turks                   | Monotheistic                 | EWC, vol. 9     |
| 48. Ghag                    | Monotheistic                 | HRAF, EG1       |
| 49. Romans                  | Polytheistic                 | N/A             |
| 50. Basques                 | Monotheistic                 | EWC, vol. 1     |
| 51. Irish                   | Monotheistic                 | EWC, vol. 4     |
| 52. Lapps                   | Shamanic                     | EWC, vol. 4     |
| 53. Yurak Somoyed or Nenets | Shamanic                     | EWC, vol. 6     |
| 54. Russians                | Monotheistic                 | EWC, vol. 6     |
| 55. Abkaz                   | Monotheistic                 | EWC, vol. 6     |
| 56. Armenians               | Monotheistic                 | EWC, vol. 6     |
| 57. Kurd                    | Monotheistic                 | EWC, vol. 6     |
| 58. Basseri                 | Communal                     | EWC, vol. 9     |
| 59. Punjabi                 | Monotheistic                 | EWC, vol. 3     |
| 60. Gond                    | Communal                     | EWC, vol. 3     |
| 61. Toda                    | Communal                     | EWC, vol. 3     |
| 62. Santal                  | Communal                     | EWC, vol. 3     |
| 63. Uttar Pradesh           | Monotheistic                 | HRAF, AW19      |
| 64. Burusho                 | Communal                     | EWC, vol. 3     |
| 65. Kazak                   | Monotheistic                 | EWC, vol. 6     |
| 66. Khalka Mongols          | Monotheistic                 | EWC, vol. 6     |
| 67. Lolo or Nosu            | Polytheistic                 | EWC, vol. 6     |
| 68. Lepcha or Rong          | Monotheistic                 | EWC, vol. 3     |
| 69. Garo                    | Communal                     | EWC, vol. 3     |
| 70. Lakher or Mara          | Communal                     | EWC, vol. 3     |
| 71. Burmese                 | Monotheistic                 | EWC, vol. 5     |
| 72. Lamet                   | Communal                     | Hickey (1964)   |
| 73. Vietnamese              | Monotheistic                 | EWC, vol. 5     |
| 74. Rhade                   | N/A                          | N/A             |
| 75. Khmer or Cambodians     | Monotheistic                 | EWC, vol. 5     |
| 76. Siamese or Central Thai | Monotheistic                 | EWC, vol. 5     |
| 77. Semang                  | Communal                     | EWC, vol. 5     |
| 78. Nicobarese              | Communal                     | EWC, vol. 3     |
| 79. Andamanese              | Communal                     | EWC, vol. 3     |
| 80. Vedda                   | Polytheistic                 | EWC, vol. 3     |
| 81. Tanala                  | Communal                     | HRAF, FY8       |
| 82. Negri Sembilan          | Monotheistic                 | HRAF, AN5       |
| 83. Javanese                | Monotheistic                 | EWC, vol. 5     |
| 84. Balinese                | Monotheistic                 | EWC, vol. 5     |
| 85. Iban or Sea Dyak        | Communal                     | EWC, vol. 5     |
| 86. Badjau                  | Monotheistic                 | EWC, vol. 5     |
| 87. Toradja                 | Communal                     | EWC, vol. 5     |
| 88. Tobelorese or Tobelo    | Too missionized              | EWC, vol. 5     |
| 89. Alorese or Abui         | Communal                     | EWC, vol. 5     |
| 90. Tiwi                    | Communal                     | EWC, vol. 2     |
| 91. Aranda or Arunta        | Communal                     | EWC, vol. 2     |
| 92. Orokaiva                | Communal                     | EWC, vol. 2     |
| 93. Kimam                   | Communal                     | Serpenti (1965) |
| 94. Kapauku                 | Communal                     | EWC, vol. 2     |
| 95. Kwoma                   | Communal                     | EWC, vol. 2     |
| 96. Manus                   | Communal                     | EWC, vol. 2     |

| Society                      | Stage of Religious Evolution | Data Source      | Society                        | Stage of Religious Evolution | Data Source |
|------------------------------|------------------------------|------------------|--------------------------------|------------------------------|-------------|
| 97. New Ireland              | Communal                     | HRAF, OM10       | 151. Papago                    | Communal                     | EWC, vol. 1 |
| 98. Trobrianders             | Communal                     | EWC, vol. 2      | 152. Huichol                   | Communal                     | EWC, vol. 8 |
| 99. Siuai or Motuna          | Communal                     | EWC, vol. 2      | 153. Aztec or Tenochca         | Polytheistic                 | EWC, vol. 8 |
| 100. Tikopia                 | Communal                     | EWC, vol. 2      | 154. Popoluca                  | Polytheistic                 | EWC, vol. 8 |
| 101. Pentecost               | Communal                     | EWC, vol. 2      | 155. Quiche                    | Communal                     | EWC, vol. 8 |
| 102. Mubau Fijians           | Communal                     | EWC, vol. 2      | 156. Miskito or Mosquito       | Communal                     | EWC, vol. 8 |
| 103. Ajie                    | Communal                     | EWC, vol. 2      | 157. Bribri                    | Communal                     | EWC, vol. 8 |
| 104. Maori                   | Polytheistic                 | EWC, vol. 2      | 158. Cuna or Tule              | Shamanic                     | EWC, vol. 7 |
| 105. Marquesans              | Polytheistic                 | EWC, vol. 2      | 159. Goajiro                   | Communal                     | EWC, vol. 7 |
| 106. Samoans                 | Too missionized              | EWC, vol. 1      | 160. Haitians                  | Communal                     | EWC, vol. 8 |
| 107. Gilbertese or Kiribati  | Communal                     | EWC, vol. 2      | 161. Callinago or Island Carib | Shamanic                     | EWC, vol. 8 |
| 108. Marshallese             | Too missionized              | EWC, vol. 1      | 162. Warrau or Guarauno        | Communal                     | EWC, vol. 7 |
| 109. Trukese                 | Too missionized              | EWC, vol. 1      | 163. Yanomamo                  | Communal                     | EWC, vol. 7 |
| 110. Yapese                  | Too missionized              | EWC, vol. 1      | 164. Carib                     | Communal                     | EWC, vol. 7 |
| 111. Palauans                | Too missionized              | EWC, vol. 1      | 165. Saramacca                 | Communal                     | EWC, vol. 7 |
| 112. Ifugao                  | Polytheistic                 | EWC, vol. 5      | 166. Mundurucu                 | Communal                     | EWC, vol. 7 |
| 113. Atayal                  | Communal                     | HRAF, AD4        | 167. Cubeo                     | Communal                     | EWC, vol. 7 |
| 114. Chinese                 | Monotheistic                 | EWC, vol. 6C     | 168. Cayapa                    | Shamanic                     | HRAF, SD6   |
| 115. Manchu                  | Monotheistic                 | EWC, vol. 6C     | 169. Jivaro or Xibaro          | Communal                     | HRAF, SD9   |
| 116. Koreans                 | Monotheistic                 | EWC, vol. 5      | 170. Amahuaca                  | Communal                     | EWC, vol. 7 |
| 117. Japanese                | Monotheistic                 | EWC, vol. 5      | 171. Inca                      | Polytheistic                 | HRAF, SE13  |
| 118. Ainu                    | Shamanic                     | EWC, vol. 5      | 172. Aymara                    | Communal                     | EWC, vol. 7 |
| 119. Gilyak                  | Shamanic                     | EWC, vol. 6R     | 173. Siriono                   | Communal                     | EWC, vol. 7 |
| 120. Yukaghir                | Shamanic                     | EWC, vol. 6R     | 174. Nambicuara                | Communal                     | EWC, vol. 7 |
| 121. Chukchee                | Shamanic                     | EWC, vol. 6R     | 175. Bacairi or Bororo         | Communal                     | EWC, vol. 7 |
| 122. Ingalik or Tinneh       | Communal                     | EWC, vol. 1      | 176. Timbira                   | Shamanic                     | HRAF, SO8   |
| 123. Aleut                   | Shamanic                     | EWC, vol. 1      | 177. Tupinamba                 | Shamanic                     | HRAF, SO9   |
| 124. Copper Eskimo           | Shamanic                     | EWC, vol. 1      | 178. Botocudo or Aimore        | N/A                          | N/A         |
| 125. Montagnais              | Shamanic                     | EWC, vol. 1      | 179. Karaja                    | Communal                     | EWC, vol. 7 |
| 126. Micmac or Sourisquois   | Communal                     | EWC, vol. 1      | 180. Aweikoma or Shokleng      | N/A                          | N/A         |
| 127. Saulteaux               | Communal                     | EWC, vol. 1      | 181. Cayua or Cainga           | N/A                          | N/A         |
| 128. Slave or Etchareottine  | Shamanic                     | EWC, vol. 1      | 182. Lengua                    | Shamanic                     | EWC, vol. 7 |
| 129. Kaska or Eastern Nahani | Too missionized              | HRAF, ND12       | 183. Abipon or Mepene          | Shamanic                     | HRAF, SI4   |
| 130. Eyak                    | Too missionized              | Krauss (1982)    | 184. Mapuche                   | Communal                     | EWC, vol. 7 |
| 131. Haida                   | Communal                     | EWC, vol. 1      | 185. Tehuelche or Patagon      | Shamanic                     | HRAF, SH5   |
| 132. Bellacoola or Bilqula   | Shamanic                     | HRAF, NE6        | 186. Yahgan or Yamana          | Shamanic                     | HRAF, SH6   |
| 133. Twana                   | Shamanic                     | Elmendorf (1974) |                                |                              |             |
| 134. Yurok                   | Communal                     | EWC, vol. 1      |                                |                              |             |
| 135. Pomo                    | Communal                     | EWC, vol. 1      |                                |                              |             |
| 136. Yokuts                  | Communal                     | EWC, vol. 1      |                                |                              |             |
| 137. Paiute                  | Communal                     | EWC, vol. 1      |                                |                              |             |
| 138. Klamath                 | Shamanic                     | EWC, vol. 1      |                                |                              |             |
| 139. Kutenai or Kootenay     | Shamanic                     | Schaeffer (1966) |                                |                              |             |
| 140. Gros Ventre or Atsina   | Communal                     | HRAF, NQ13       |                                |                              |             |
| 141. Hidatsa or Minitari     | Communal                     | EWC, vol. 1      |                                |                              |             |
| 142. Pawnee                  | Communal                     | EWC, vol. 1      |                                |                              |             |
| 143. Omaha                   | Communal                     | HRAF, NQ12       |                                |                              |             |
| 144. Huron or Wendot         | Shamanic                     | EWC, vol. 1      |                                |                              |             |
| 145. Creek or Muskogee       | Communal                     | EWC, vol. 1      |                                |                              |             |
| 146. Natchez                 | Communal                     | Van Tuyl (1979)  |                                |                              |             |
| 147. Comanche                | Shamanic                     | EWC, vol. 1      |                                |                              |             |
| 148. Chiricahua Apache       | Communal                     | EWC, vol. 1      |                                |                              |             |
| 149. Zuni                    | Communal                     | EWC, vol. 1      |                                |                              |             |
| 150. Havasupai               | Shamanic                     | HRAF, NT14       |                                |                              |             |

## Appendix B INTERCORRELATIONS AMONG INDEPENDENT VARIABLES

|                | Size | Strat | Econ | Polit | Writ | Tech | Sov |
|----------------|------|-------|------|-------|------|------|-----|
| Size           |      |       |      |       |      |      |     |
| Stratification | .597 |       |      |       |      |      |     |
| Economy        | .757 | .568  |      |       |      |      |     |
| Political      | .744 | .697  | .670 |       |      |      |     |
| Writing        | .568 | .561  | .632 | .630  |      |      |     |
| Technology     | .702 | .689  | .737 | .610  | .490 |      |     |
| Sovereign      | .627 | .624  | .645 | .764  | .502 | .518 |     |

N's range from 148 to 186.