Religion and Intragroup Cooperation: Preliminary Results of a Comparative Analysis of Utopian Communities

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Several authors have argued that religious beliefs are a way of communicating commitment and loyalty to other group members. The advantage of commitment signals is that they can promote intragroup cooperation by overcoming the free-rider problems that plague most cooperative pursuits. In this article, the author tests this idea using a database on 19th century utopian communes. The economic success and survival of utopian communes is dependent upon solving the collective-action problem of cooperative labor. If religious beliefs foster commitment and loyalty among individuals who share those beliefs, communes formed out of religious conviction should survive longer than communes motivated by secular ideologies such as socialism. Preliminary results from survivorship analysis support this hypothesis; religious communes are more likely than secular communes to survive at every stage of their life course. These results are discussed with reference to a modern communal movement, the Israeli kibbutz.

In a recent series of articles, Irons (1991, 1996a, 1996b, 1996c) has argued that the human capacity for religion may have evolved to facilitate intragroup cooperation. Irons's work on the foundations of human morality synthesizes economic (Frank, 1988; Schelling, 1960), biological (Alexander, 1987), and anthropological (Boyd & Richerson, 1992) approaches to the origins and evolution of morality. He argues that in human history, the adaptive advantage of group living was the benefits that individuals attained through intragroup cooperation such as cooperative hunting, food sharing, warfare, and defense. Despite the potential for individual gains through cooperation, however, these collective pursuits are often difficult to achieve. Intragroup cooperation is typically limited by collective action problems that arise when group members have the potential to free ride (Dawes, 1980; Olson, 1965). Free riding is a strategy in which an individual can maximize his or her gains by refraining from cooperation if others invest in the cooperative activity. Thus, although everyone may gain if all group members invest in the cooperative goal, attaining such large-scale cooperation is often difficult to achieve without social mechanisms limiting free-riding opportunities.

Economists such as Schelling (1960) and Frank (1988) recognize that the potential for collective action is confronted with problems of trust and commitment. If an individual can guarantee his participation in a cooperative pursuit, intragroup cooperation is more likely to emerge. The dilemma is that in human social interactions, it is generally impossible to guarantee a commitment to cooperate. For example, if custom dictates that hunters equally share whatever they individually catch at the end of the day, each hunter must trust that the other hunters will spend their day attempting to catch game. If men are hunting alone and there is high variance in returns from hunting, it will be difficult to determine on a given day whether someone was simply unlucky or attempting to free ride on the efforts of others. Without mechanisms limiting the gains that free riders achieve, or exogenous benefits that reward only cooperative hunters, trust is essential for this hunting/food-sharing system to be stable.

One strategy available to overcome the obstacle of collective action is to advertise a willingness to cooperate. However, stating "I promise that I will spend my day hunting to the best of my ability" is not believable unless trust between the hunters already exists. Indeed, social scientists and biologists have long recognized

that signals and displays may not provide accurate information about intentions (Dawkins & Krebs, 1978; Johnstone, 1997; Krebs & Dawkins, 1984). When faced with the conditions of collective action, the incentive to falsely claim that one will cooperate is especially high because individuals can achieve their greatest gains by refraining from cooperation while coercing others to cooperate. Therefore, whenever the gains for defection outweigh the costs of cooperation, the only credible commitment signals are those that are "costly-to-fake" (Zahavi & Zahavi, 1997). If commitment signals are not costly-to-fake, they can easily be imitated by free riders who do not intend to invest in the cooperative pursuit. Several researchers (Cronk, 1994; Iannaccone, 1992, 1994; Irons, 1996c) have suggested that religious rituals are costly-to-fake signals.

Adherence to a set of religious beliefs often entails a host of ritual obligations and expected behavioral patterns. For example, adherents of traditional or *halachic* Judaism are expected to pray three times a day, donate a certain part of their income to charity, eat only kosher food, refrain from work one day a week, as well as partake in dozens of other rituals each day. Although there may be physical or mental health benefits associated with some of these behaviors, there are also significant time, energy, and financial costs involved, costs that are unlikely to be paid by individuals who do not believe in the teachings of traditional Judaism. Rituals, therefore, operate as costly-to-fake signals of commitment for group members. Individuals who are willing to pay the costs of performing religious rituals are signaling that they believe the religious doctrine that gives meaning to the ritual and are therefore committed to the religious group.

The increased commitment and loyalty among those who share religious beliefs enables religious group members to overcome problems of collective action. By increasing trust among group members, religious groups are able to avoid or minimize costly monitoring and punishment systems that are otherwise necessary to overcome the free-rider problem that typically plagues communal enterprises. Irons (1991, 1996a, 1996b, 1996c) has argued that the selective benefits of intragroup cooperation could have favored an evolved human psychology that facilitates religious belief and associated behavior patterns. In other words, the universal human capacity for religion is a result of selective pressures that favored individuals who adopted religious beliefs and practices in our evolutionary history.

HYPOTHESIS

Although Irons's (1991, 1996a, 1996b, 1996c) theoretical arguments for the evolution of religion are compelling, there is no empirical research that tests hypotheses generated from this body of work. The goal of this article is to empirically evaluate whether religion promotes intragroup cooperation. One possible test is to compare how religious and nonreligious groups solve collective action problems. Irons's theory predicts that religious groups will be more successful than nonreligious groups at overcoming problems of collective action. Alternatively, if adherence to a nonreligious or secular ideology is as successful at promoting intragroup cooperation as adherence to a religious ideology, there may not be anything unique about religious belief that needs to be explained from an evolutionary perspective. In other words, religion may simply be a type of ideology (e.g., no different than a political ideology) and why humans adhere to any ideology is what needs to be explained, rather than why religion may be a unique adaptive strategy.

The histories of utopian communities provide an interesting database to test the idea that religion can promote intragroup cooperation, because the economic success and thus survival of these communities was dependent upon their abilities to solve the collective-action problem posed by cooperative labor (Sosis, 1997). All communes share the goal of survival, and thus longevity is a valid measure of a commune's ability to overcome problems of collective action. If religious beliefs foster commitment and loyalty among individuals who share those beliefs, communes that were formed out of religious conviction should have greater longevity than communes that were motivated by secular ideologies such as socialism.

DATA SET

Historians estimate that there have been roughly 3,000 utopian experiments in human history, the vast majority of these occurring in the United States (Oved, 1997). The 19th century was a particularly prolific period in the history of U.S. utopian societies. Although the earliest communes of the 19th century were religiously motivated, by the 1820s, communes that were based on secular ideologies (i.e., mainly socialism) began to emerge. Despite

their differences in goals and world views, both religious and secular communes during this time period were motivated by ideologies that where at odds with mainstream U.S. culture, and thus resulted in their separation from mainstream U.S. life.

Several previous researchers have comparatively studied U.S. utopian societies (e.g., Abrams & McCulloch, 1976; Hinds, 1908/1975; Oved, 1988; see Minturn, West, & Peterson, 1981 for a useful bibliography), although few have attempted to do so quantitatively. A notable exception is the work of Kanter (1968, 1972), who examined the common attributes of successful communes. Kanter defined "successful" as a life span of 25 years or more—in other words, communes that survived at least one generation. In her sample of 30 communities, only 9 survived longer than 25 years and all 9 were religiously motivated communes. For over 25 years, her work has stood as the most in-depth comparative analysis of U.S. utopian societies.

I was concerned about accepting her results, which suggest that nonreligious communes are less likely to be successful than religious communes, for several reasons. First, I was concerned about the small sample size of her study and especially about how the communities were chosen. Her sample of 30 communes was selected from a list of 124 communes gathered by historian Arthur Bestor. The communes were chosen primarily on the basis of available information with a strong bias toward inclusion of the successful communes in Bestor's list. Second, Kanter's analysis was limited to utopian societies that were founded between 1780 and 1860. A comparison between secular and religious communes should consider a historical time period in which both types of communes were in existence for the entire sample period. Secular communes were in existence for less than half of the years Kanter examined. Third, the success of the Israeli *kibbutzim*, which are predominantly secular, seemed to contradict her results. Therefore, I felt it was necessary to build upon Kanter's work and pursue a more comprehensive analysis of the religious and secular comparison.

Until the recent publication of *America's Communal Utopias* (Pitzer, 1997), the most comprehensive list of U.S. utopian communes was compiled by Oved (1988). His compilation consists of 277 communes founded between 1663 and 1937. This list is certainly not exhaustive, as Pitzer's compilation of nearly twice the size has shown; however, it is certainly representative.

Oved's list of U.S. communes includes the years of existence, location by state, and a classification of each commune according to ideology (e.g., socialist, anarchist, religious). The data set I used for my comparative analysis of the survivorship of religious and secular communes consisted of 200 of the original 277 communes. Oved's data set was reduced in three ways:

1. It was decided to concentrate the analyses on 19th century and early 20th century communes, thus all pre-19th century cases were eliminated ($n = 21$). As noted above, no secular communes existed prior to the 19th century.
2. All Hutterite Colonies were eliminated from this analysis ($n = 20$). Although it would be possible to control for the Hutterite effect, it was decided that the case of the Hutterites was so exceptional that they should not be included in the analysis, at least not at this stage. No other communal movement has been even remotely as successful as the Hutterites; they have outlasted all other communal societies (in the United States, from 1874 to the present) and have established significantly more communal settlements than any other communal group (approximately 400 colonies currently exist). Indeed, many historians have commented that with the exception of the Hutterites, all communes can be considered failures (Oved, 1997). Because the Hutterites are ideologically religious, the inclusion of the Hutterites in the analysis would bias the results in the predicted direction.
3. All cases in which there was not sufficient information on whether the commune was ideologically secular or religious were eliminated ($n = 36$).

Communes in Oved's data set coded as "Socialist," "Anarchist," "Owenite," or "Fourierist"[1] were classified as nonreligious or secular communes, and communes coded as "Religious" or "Shaker" were classified as religious communes. The year founded and year dissolved for each commune was checked against Pitzer's compilation. When Pitzer's and Oved's data differed, I used Pitzer's data (there were no differences greater than several years). This choice was made because Pitzer's compilation was more recently published and he had the benefit of assessing Oved's data.

RESULTS

The mean life span in years of secular and religious communes are presented in Table 1.[2] Table 2 presents the mean life span in

TABLE 1
Range and Mean Duration
of 200 19th-Century U.S. Secular and Religious Communes

|	n	Duration (years)		Mean (Standard Error)
		Minimum	*Maximum*	
Secular	112	0	84	6.4 (0.967)
Religious	88	1	112	25.3 (3.293)

TABLE 2
Range and Mean Duration of
19th-Century Owenite, Fourierist, and Shaker Communes

	n	Duration (years)		Mean (Standard Error)
		Minimum	*Maximum*	
Owenite	14	0	10	2.1 (0.670)
Fourierist	37	0	16	3.2 (0.670)
Shaker	13	4	113	56.7 (11.658)

years of the three most numerous types of communes in the data set: Owenite, Fourierist, and Shaker. Although the results presented in Tables 1 and 2 indicate that religious communes on average survive longer than secular communes, demographic techniques are necessary to compare the rates of survivorship of secular and religious communes. Therefore, life tables were created in which the mortality and survivorship rates of the 88 religious communes and 112 secular communes in the data set were calculated.

Figure 1 presents the survivorship functions of secular and religious communes. A log-rank test evaluates whether the survival functions of two populations are different (Matthews & Farewell, 1988). The results of a log-rank test indicate that the survivorship functions of religious and secular communes are significantly different in the predicted direction ($T = 40.14$, $df = 1$, $p < .00001$).

It is possible that secular and religious communes are equally successful at overcoming the problems of collective action, but that secular communes are simply not as successful as religious communes at maintaining their ideological belief among members. In other words, it may be that both types of ideologies are equally
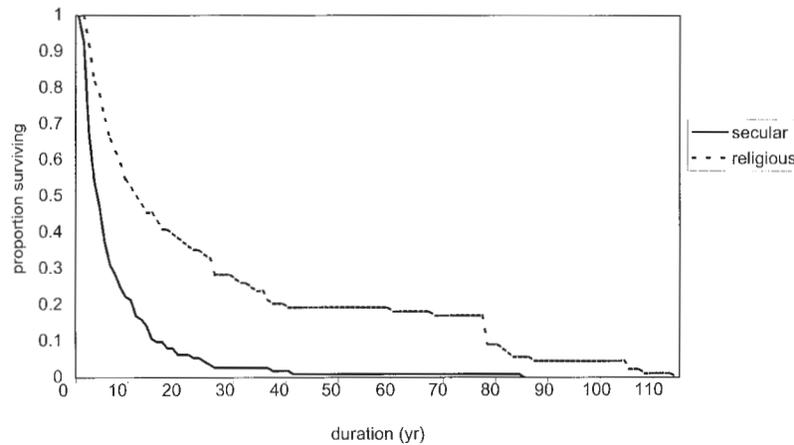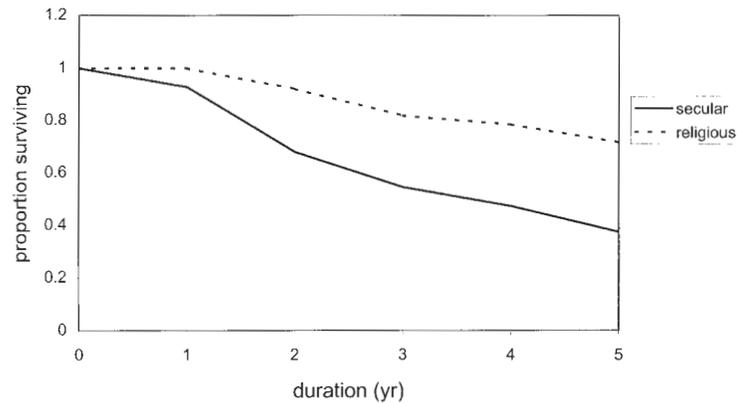
Figure 1: Survivorship Curves of 19th Century U.S. Secular and Religious Communes. Results of a Log-Rank T test are Significant (Log Rank *T* statistic = 40.14; *df* = 1; *p* < .00001)

good at promoting cooperation at the outset of a cooperative pursuit, but that adherents of a secular ideology lose faith more quickly, hence, the apparent difference in survivorship between secular and religious communes. However, a closer look at the survivorship curves show that the difference in survivorship is apparent in the first few years of existence. Figure 2 presents the survivorship curves for the first five (yearly) intervals (i.e., whether or not a commune survived to its fifth birthday). The log-rank test shows that these survivorship curves are significantly different ($T = 26.70$, $df = 1$, $p < 0.00001$).

Table 3 shows that secular communes are twice as likely to dissolve within their first 5 years of existence and four times as likely to dissolve within their first 2 years of existence as religious communes. This difference is important because it indicates that the difference between secular and religious communes manifests itself early, and that the difference is not merely a consequence of members losing faith in secular ideologies more quickly than religious ideologies (although this does appear to be happening). These results suggest that there is something fundamentally different between secular and religious communes and that this difference exists at every stage of their life course.

Logistic regression is used to model the hazard of an event occurring. The event we are interested in modeling is whether or

Figure 2:   Survivorship curves of the 19th-Century U.S. Secular and Religious Communes Over First 5 Years of Existence. Results of a Log-Rank T test are Significant (Log Rank *T* statistic = 26.70; *df* = 1; *p* < .00001)

TABLE 3
Hazard of Dissolution Within First 2 and
5 Years of Existence of Secular and Religious Communes

	n *At Risk*	n *Dissolved Within First 5 Years*	*Hazard*	n *Dissolved Within First 2 Years*	*Hazard*
Secular	112	77	0.69	36	0.34
Religious	88	30	0.34	7	0.08

not a commune has dissolved. In our data set, there is only one commune that is currently in existence as a communal enterprise today; all others have dissolved. The data set involves 200 communes over 179 possible years of existence. The total risk set consists of 3,129 commune years.

Table 4 shows the results of logistic regression analysis on the hazard of a commune dissolving. The "religious" covariate was coded as "1" if a commune maintained a religious ideology and "0" if a commune maintained a secular ideology. The results indicate that maintaining a religious ideology is a significant predictor of whether or not a commune dissolved. The odds of a secular

TABLE 4
Logistic Regression Analyses of the Probability of Dissolution

Independent Variable	Parameter Estimate	Standard Error	p value
Full model Chi-square = 82.94, *df* = 1, *p* < .0001			
Intercept	−1.860	0.102	< .0001
Religious (*yes* = 1, *no* = 0)	−1.366	0.149	< .0001
Full model Chi-square = 126.16, *df* = 4, *p* < .0001			
Intercept	−2.205	0.131	< .0001
Religious	−0.803	0.174	< .0001
Owenite	1.443	0.349	< .0001
Fourierist	0.965	0.219	< .0001
Shaker	−1.030	0.304	0.0007
Full model Chi-square = 126.47, *df* = 5, *p* < .0001			
Intercept	−5.783	6.405	0.3666
Religious	−0.746	0.200	0.0002
Owenite	1.552	0.401	< .0001
Fourierist	1.038	0.256	< .0001
Shaker	−0.965	0.325	0.003
Year founded	0.002	0.003	0.5762
Full model Chi-square = 126.92, *df* = 5, *p* < .0001			
Intercept	2.307	5.172	0.6555
Religious	−0.844	0.180	< .0001
Owenite	1.283	0.393	0.0011
Fourierist	0.854	0.253	0.0007
Shaker	−1.073	0.308	0.0005
Year at risk	−0.002	0.003	0.3831

n = 3,129 for each model.

commune dissolving in a given year are nearly four times as great as a religious commune dissolving (odds ratio = 0.255).

Table 4 presents the results of a logistic regression model that controls for the effect of the three largest movements in the data set: Owenite, Fourierist, and Shaker. For each dummy variable, if the commune was part of the movement it was coded as "1," otherwise it was coded as "0." Results indicate that they are all significant predictors of whether or not a commune dissolved, and that religiousness is still a strong predictor of dissolution.

It is also important to control for the year a commune was founded and the year that a commune is at risk of dissolving. Results in Table 4 indicate that neither the year a commune was founded nor the year it is at risk of dissolving have a significant effect on the probability of a commune's dissolution.

DISCUSSION

The analyses presented above all indicate that religious communes in the 19th century had much greater longevity than secular communes. It is worth noting that these results are conservative. If Hutterite Colonies or 18th century Shaker communes (which survived longer than their 19th century counterparts) had been included in the analysis, the disparity in longevity between religious and secular communes would be even greater.

Despite the success of these results, there are significant issues that need to be addressed before this analysis can be seen as supportive of the argument that religion promotes intragroup cooperation. The most important limitation of the preceding analysis is the assumption that communes dissolved as a result of their inability to overcome the collective-action problem of cooperative labor. Communes also dissolve for a number of other reasons, such as the death of the charismatic leader-founder, the aging or death of the founding generation, church- or state-sponsored persecution, and natural disaster. I would argue, however, that these are proximate causes of dissolution and that the ultimate cause is often a loss of ideological fervor. In other words, groups that strongly believe in the ideology that unites them will be better able to overcome obstacles and tragedies that may result in the dissolution of less "devout" groups.

Oved's (1988) comparative study of the dissolution of communes supports this argument. The author concluded that despite varying causes of the breakdown of utopian communities, every breakdown is preceded by a loss of faith in the ideology, whether religious or secular, that originally motivated the establishment of the community. If Oved's assessment is accurate, the results presented here are promising. In other words, if the loss of belief in an ideology always precedes the dissolution of a commune, it indicates that it is adherence to an ideology that is responsible for the community's ability to overcome the problems of collective action and to work cooperatively.

Another limitation of the analysis presented here is that I have not eliminated alternative hypotheses that may explain the success of religious communes. The results support any theory that posits that religion promotes intragroup cooperation. For example, I have not eliminated the possibility that religion did not solve an adaptive problem in our evolutionary history, but that religious ideologies simply exploit psychological mechanisms that have

evolved to promote intragroup solidarity (cf. Mithen, 1998). Group selection (see Sober & Wilson, 1998) may also explain variation in commune longevity. Indeed, Wilson and Sober (1994) describe Hutterite Colonies as a human group-level "organism," arguing that "group selection has operated throughout human history, endowing the human psyche with the ability to construct and live within group-level vehicles of the sort exhibited by the Hutterites" (p. 603). Rappaport's (1979, 1999) ideas on the role of ritual in human evolution, which also heavily rely on group-selection theory, provide an additional set of arguments that may explain the success of religious communes. The challenge of future work will be deriving hypotheses that generate unique predictions for each of these theories.

Costly Rituals

I have argued that religious communes in the 19th century had greater longevity than secular communes, owing to the increased commitment of those who shared religious beliefs as a result of performing costly rituals. Future work will be necessary to explore the varieties of costly rituals engaged in by religious communities and how they impact communal success. For example, one reservation I had about pursuing the above analysis concerned the fact that many religious communes practiced celibacy, whereas celibacy was rare among secular communes. It seemed obvious that communes that could not replenish their population through procreation would be short lived. However, Kanter (1972) found that all of the communes that survived longer than 25 years in her sample ($n = 9$) practiced celibacy at some point in their existence. In contrast, only two of the communes that survived less than 25 years ($n = 21$) ever practiced celibacy. These results are startling but explicable if celibacy is recognized as a costly signal that increases intragroup commitment. Indeed, in terms of reproductive fitness, celibacy is one of the costliest signals imaginable.

The question remains, however: If religious communes are more successful because their members engage in costly rituals that are inherent in religious practice, why have secular utopias not adopted costly ritual behaviors? Irons (1996c) suggests that some secular groups such as fraternities and armies do engage in costly rituals. Often, however, these are initiation rites (e.g., hell week, boot camp) that may increase commitment once membership has been attained, but fail by themselves to sustain lifetime commit-

ment. The constant reinforcement of daily rituals, more common among religious communities, appears to be the most successful means of maintaining long-term commitment. Future research will need to address whether secular communes that engage in any costly ritual behavior are as successful as religious communes, and if secular rituals do promote intragroup cooperation, why secular communes do not engage in more costly ritual behaviors.

Rappaport's (1999) work on the evolution of religion may offer some useful insights into these issues. The author has argued that ritual is inherent in the structure of religious beliefs and that human ritual and religious beliefs have coevolved. Although Rappaport has not specifically evaluated the relationship between ritual and secular ideology, his argument that the "sacred" and "numinous" are essential aspects of ritual suggests that in contrast to religious belief, there is no reason to expect an inherent relationship between ritual and secular ideology.

The Kibbutz

As previously mentioned, the reason I was reluctant to accept Kanter's (1968) results was that the Israeli kibbutz, the second most successful communal experiment in history (behind the Hutterite Colonies), is predominately secular. The kibbutz movement may, however, experience a phenomenon similar to their 19th century U.S. counterparts.

The kibbutz was originally conceived as a small collective farming settlement in which members based their social and cultural lives on the collective ownership of property and wealth. Guided by the dictum "from each according to his abilities, to each according to his needs," kibbutz members received food, shelter, clothing, education, health care, and a small stipend for their work. The first kibbutz, Degania, was established in the Galilee in 1909. Since then, the kibbutz movement has grown to over 270 settlements located in every region in Israel. Kibbutzim range in population from less than 50 to over 2,000 people. The approximately 124,000 individuals currently living on kibbutzim comprise less than 3% of the Israeli population (*Kibbutz Facts and Figures*, 1997; Leichman & Paz, 1997).

The kibbutz developed out of an egalitarian ideology rooted in Socialist Zionism as well as the pragmatism of group living during the early colonization of Palestine by Eastern European Jews. The early kibbutzniks were fiercely socialist and secular. One of the

goals of the kibbutz movement was to establish a Jewish farm class in Palestine that would ensure Jewish control of the means of production (Near, 1992). Although originally agriculturally based, kibbutzim were unable to survive economically through farming alone. Over the past several decades, the kibbutzim have accepted the challenge and diversified their economic portfolios. Today, enterprises such as tourism, health spas, and factories producing everything from furniture to windshields provide the majority of the kibbutzim's income.

Despite the shift away from an agriculturally based economy, the kibbutzim have only survived economically through a combination of government subsidy, Jewish philanthropy, and debt forgiveness from Israeli banks. Indeed, in the late 1980s it was exposed that the kibbutzim were collectively over 4 billion dollars in debt and were in need of a government bail out. Curiously, one small segment of the kibbutz population was not in need of any government assistance: the religious kibbutzim. Indeed, the per capita net production of the religious kibbutzim has been higher than that of the secular kibbutzim in every decade of their 70-year existence (Fishman & Goldschmidt, 1990).

The history of the religious kibbutzim begins several decades after the establishment of the original kibbutzim. Religious Jewish pioneers who wanted to live within a religious kibbutz framework began immigrating to Palestine in the late 1920s. The first religious kibbutz was established by the Rodges Group in 1931 and ultimately named Yavne in 1941. Since then, the Religious Kibbutz Movement, formally established in 1935, has grown to represent over 8,000 members in 16 kibbutzim. The religious kibbutzim were not anticipated by the formulation of an explicit and detailed ideology (Katz, 1995). Religious kibbutzim integrated the secular kibbutz culture grounded in socialist ideology and a religious culture rooted in traditional or halachic Judaism. In contrast to the secular kibbutzim, it was the commitment of the religious kibbutzim to traditional Judaism that fostered their socialist perspective. Despite their religious motivations, they modeled their communal lifestyle and economic structures after the secular kibbutzim that preceded them (Fishman, 1983, 1987, 1992).

As Fishman points out, it is remarkable that the religious kibbutzim have succeeded economically, given that many of the rituals maintained by the religious kibbutzim are truly costly. For example, Jewish law does not permit Jews to milk cows on the Jewish Sabbath. Although rabbinic rulings have permitted these

religious kibbutzniks to milk their cows to prevent the cows from suffering, none of this milk is used commercially. The paradox of the economic success of the religious kibbutzim is resolved, however, if the costly ritual behavior of religious kibbutz members increases intragroup commitment and cooperation among religious kibbutzim. Religious kibbutzim may be successful owing to their ability to overcome the free-rider problems inherent in communal societies. Tests of this hypothesis will further evaluate Irons's theory of the evolution and function of religious belief.

CONCLUSION

There are obvious limitations to the kind of historical analysis presented here. However, four avenues of future research should help clarify the validity of these initial results. First, it will be necessary to determine the precise cause of dissolution among communes in the data set. Future analyses would then be able to control for these effects. It would also be valuable to determine if empirical tests bear out Oved's (1997) claim that commune dissolution is typically preceded by a loss of faith in the uniting ideology. Second, future research will be necessary to describe the variation in costly ritual behavior of religious commune members and to determine whether this variation can account for differences in longevity among religious communes. It will also be important to seek examples of costly rituals regularly performed by members of secular communes. Are secular communes whose members engage in costly ritual behavior as successful at promoting intragroup cooperation as religious communes? Third, alternative explanations for the success of religious communes need to be explored. Specifically, unique alternative hypotheses that are empirically testable must be developed from theories based on the principles of group selection (e.g., Rappaport, 1999; Wilson & Sober, 1994). Fourth, historical analyses will always pose certain constraints because the data were not collected with the intention of testing the hypotheses of interest. Therefore, it will be important to pursue comparative analyses of extant religious and secular communes. I am currently pursuing research that is aimed at comparing the levels of trust and commitment within religious and secular kibbutzim.

Notes

1. Communes that did not belong to the Fourierist movement but adopted Fourierist ideals, such as Brook Farm, were categorized as Fourierist for the analysis.

2. Arden of New Castle County, Delaware is the only commune in the data set that is currently in existence. Arden is also the longest surviving secular commune in the data set. The year 1984 is the last year included in Oved's database, and therefore I chose the same cutoff for my analysis. Arden was founded in 1900 and thus for the calculation of the mean longevity, Arden was input as 84 years (although this is an underestimate). This is a shortcoming of comparing the means of survivorship data, although the effects here are obviously minimal. There is no problem in the subsequent analysis because logistic regression is used, which can correctly handle censored data.

References

Abrams, P., & McCulloch, A. (1976). *Communes, sociology, and society*. Cambridge, UK: Cambridge University Press.

Alexander, R. (1987). *The biology of moral systems*. New York: Aldine de Gruyter.

Boyd, R., & Richerson, P. (1992). Punishment allows the evolution of cooperation (or anything else) in sizable groups. *Ethology and Sociobiology*, *13*, 171-195.

Cronk, L. (1994). Evolutionary theories of morality and the manipulative use of signals. *Zygon*, *29*, 81-101.

Dawes, R. (1980). Social dilemmas. *Annual Review of Psychology*, *31*, 169-93.

Dawkins, R., & Krebs, J. (1978). Animal signals: Information or manipulation? In J. Krebs & N. Davies (Eds.), *Behavioural ecology: An evolutionary approach* (1st ed., pp. 282-309). Oxford, UK: Blackwell Scientific Publications.

Fishman, A. (1983). The religious kibbutz: Religion, nationalism, and socialism in a communal framework. In E. Krausz (Ed.), *The sociology of the kibbutz* (pp. 115-123). New Brunswick, NJ: Transaction Press.

Fishman, A. (1987). Religion and communal life in an evolutionary-functional perspective: The orthodox kibbutzim. *Society for Comparative Study of Society and History*, 763-786.

Fishman, A. (1992). *Judaism and modernization on the religious kibbutz*. Cambridge, UK: Cambridge University Press.

Fishman, A., & Goldschmidt, Y. (1990). The orthodox kibbutzim and economic success. *Journal for the Scientific Study of Religion*, *29*, 505-511.

Frank, R. (1988). *Passions within reason*. New York: Norton.

Hinds, W. (1975). *American communities and cooperative colonies*. Philadelphia: Porcupine Press. (Original work published 1908)

Iannaccone, L. (1992). Sacrifice and stigma: Reducing free-riding in cults, communes, and other collectives. *Journal of Political Economy*, *100*, 271-291.

Iannaccone, L. (1994). Why strict churches are strong. *American Journal of Sociology*, *99*, 1180-1211.

Irons, W. (1991). How did morality evolve? *Zygon*, *26*, 49-89.

Irons, W. (1996a). In our own self image: The evolution of morality, deception, and religion. *Skeptic*, *4*, 50-61.

Irons, W. (1996b). Morality as an evolved adaptation. In J. Hurd (Ed.), *Investigating the biological foundations of human morality* (pp. 1-33). Lewiston, NY: Edwin Mellen Press.

Irons, W. (1996c). Morality, religion, and human nature. In W. Richardson & W. Wildman (Eds.), *Religion and science: History, method, and dialogue* (pp. 375-399). New York: Routledge.

Johnstone, R. (1997). The evolution of animal signals. In J. Krebs & N. Davies (Eds.), *Behavioural ecology: An evolutionary approach* (4th ed., pp. 155-178). Oxford, UK: Blackwell Scientific Publications.

Kanter, R. (1968). Commitment and social organization: A study of commitment mechanisms in utopian communities. *American Sociological Review*, *33*, 499-517.

Kanter, R. (1972). *Commitment and community*. Cambridge, MA: Harvard University Press.

Katz, Y. (1995). The religious kibbutz movement and its credo, 1935-1948. *Middle Eastern Studies*, *31*, 253-280.

Krebs, J., & Dawkins, R. (1984). Animal signals: Mind-reading and manipulation. In J. Krebs & N. Davies (Eds.), *Behavioural ecology: An evolutionary approach* (2nd ed., pp. 380-402). Oxford, UK: Blackwell Scientific Publications.

Leichman, D., & Paz, I. (Eds.). (1997). *Kibbutz: An alternative lifestyle*. Efal, Israel: Yad Tabenkin.

Matthews, D., & Farewell, V. (1988). *Using and understanding medical statistics*. New York: Karger.

Minturn, L., West, M., & Peterson, C. (1981). *American communal societies; theory and ethnography: A selected, annotated bibliography*. Monticello, IL: Vance Bibliographies.

Mithen, S. (1998). Cognitive archaeology, evolutionary psychology and cultural transmission, with particular reference to religious ideas. In C. Barton & G. Clark (Eds.), *Rediscovering Darwin: Evolutionary theory and archaeological explanation* (pp. 67-74). Washington, DC: American Anthropology Association.

Near, H. (1992). *The kibbutz movement: A history* (Vol. 1). New York: Oxford University Press.

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Cambridge, MA: Harvard University Press.

Oved, Y. (1988). *Two hundred years of American communes*. New Brunswick, NJ: Transaction Books.

Oved, Y. (1997). The lesson of the communes. In D. Leichman & I. Paz (Eds.), *Kibbutz: An alternative lifestyle* (pp. 159-165). Efal, Israel: Yad Tabenkin.

Pitzer, D. (1997). *America's communal utopias*. Chapel Hill: University of North Carolina Press.

Rappaport, R. (1979). *The obvious aspects of ritual*. In R. Rappaport (Ed.), *Ecology, meaning, and religion* (pp. 173-221). Berkeley, CA: North Atlantic Books.

Rappaport, R. (1999). *Ritual and religion in the making of humanity*. Cambridge, UK: Cambridge University Press.

Schelling, T. (1960). *The strategy of conflict*. Cambridge, MA: Harvard University Press.

Sober, E., & Wilson, D. (1998). *Unto others: The evolutionary and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.

Sosis, R. (1997). *The collective action problem of male cooperative labor on Ifaluk Atoll*. Unpublished doctoral dissertation, University of New Mexico.

Wilson, D., & Sober, E. (1994). Reintroducing group selection to the human and behavioral sciences. *Behavioral and Brain Sciences, 17*, 585-654.

Yad Tabenkin. (1997). *Kibbutz Facts and Figures* [Brochure]. Efal, Israel: Author.

Zahavi, A., & Zahavi, A. (1997). *The handicap principle*. New York: Oxford University Press.

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