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Judaism in Evolutionary Perspective

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Abstract

The present paper proposes a paradigm to understand the evolution of religious behaviour specifically Jewish religious practice. The theoretical framework rests upon a combination of reciprocal altruism, costly signal theory and cognitive dissonance. It assumes evolutionary theory in general and mimetic evolution in particular. It is unique to the degree that it is authored by an evolutionary psychologist who is also a rabbi. We present the foundations of the three bio-psychological theories; and address Dawkins' and Dennett's theories of the scientific study of religion as well as some of the reservations. Finally, we examine briefly certain Jewish rituals in light of the model presented.

Keywords: Judaism, evolution, religions, costly signals, memes
Słowa kluczowe: judaizm, ewolucja, religie, kosztowne sygnały, memy

Introduction

Any study of religious practice is, by definition, speculative[1]. There is no way to confirm or disconfirm any proposed account of the origins of religious behaviour in as much as we have no true witnesses. To be sure, those who take a fundamentalist approach to religion will claim that the Bible in general and the Hebrew Bible in particular provide us with clear facts as to the origins of the world and of humanity. However, with the advent of scientific inquiry and evolutionary theory, the divine authorship of the Bible has been called into question.

The methods herein do not provide hard and fast proof that evolutionary theory can explain religious evolution. Nor can we conclude that our behaviours, religious or otherwise, evolved in a particular fashion. As such, any paradigm offered to explain a particular set of human behaviours is just that: a paradigm.

[1] The development of this paradigm is an intial product in an ongoing project of the Center for the Study of Bio-social Perspectives on Judaism at the Schechter Institute of Jewish Studies. I am grateful to Binah Yiztrit Foundation and its founder Rick Goldberg for their continued support.

On the other hand, if we accept that the world is over four billion years old, and that humanity is a product of biological evolution, it stands to reason that the sum total of human behaviors evolved over millions of years, from the early hominids to later homo-erectus and ultimately homo-sapiens. The process of natural selection leads to the survival of certain traits and behaviors at the expense of other traits and behaviours. The current paper, therefore, will present a paradigm from which I hope will emerge scientific inquiry and experimentation as to why Jewish religious behaviours have survived for nearly 2000 years.

One may ask how evolutionary theory could be applied to the Jewish people. Indeed, the primary measure of evolutionary fitness is reproductive success. By this criterion, Jews have not been very successful. However, we must look at that question with two significant caveats. First, the number of members of any particular group is not the only measure of evolutionary success. Indeed, we may say that the fact that Jewish religious practice as propagated by Jews has lasted for so long, *despite* the small number of proponents, suggests a certain success. Indeed, Deuteronomy (7:7) states explicitly that God chose the Jewish people because their destiny was to be small in number. Cultural evolutionary theory might well explain this by assuming that the authors of Deuteronomy needed to provide textual support for the empirical observation that Israelite culture did not spread throughout the world; the architects of that culture were faced with the fact that they were going to be out-numbered by most peoples.

However, there is another, more important way to address this reservation of evolutionary success. Evolutionary success is not only (indeed usually not) measured by comparing members of different species. It is measured by comparing the success within the species. We do not ask if a guppy is more successful than a lion, or if a peacock is more successful than a reindeer. Rather, we attempt to understand how certain members of the species succeed more than other members of that same species. Here reproductive success is the primary empirical measure.

From this perspective, we must first look at the term "species" in a metaphoric sense. Obviously, Jews are not a different species from any other human culture. Nevertheless, for the purposes of this paper that is how I would suggest we look at them. We will not compare Jews to Christians, Muslims, Buddhists, Americans or Atheists. We compare Jews to Jews. And this makes cultural-biological sense. For many years Jews tried to mate exclusively within their "species." Those who did not were no longer part of the "species." Therefore, the proper question is which type of Jews succeeded reproductively. To this question the answer is clear. The more pious far out-reproduce their less religious coreligionists. The application of evolutionary theory to Jewish religious practice can help to explain why the most successful members of the Jewish "species" tend to be the most religious and, at the same time, shun modernity, which is assumed to be reproductively beneficial[2].

[2] There is a certain implied irony to modern reproductive "behaviours". It is entirely possible that the least religious members of society are actually more "successful" than their religious compatriots. That is they may copulate with greater frequency. However, this does not always lead to pregnancy. In fact it is likely that pregnancy is avoided by birth control methods. The application of reproductive

Two particular religious behaviours stand out as predictors of Jewish reproductive success: circumcision (*milah*) and familial ritual purity (*niddah*). Numerous studies tie circumcision to a decreased level of infection with sexually transmitted diseases[3]. This alone does not distinguish any particular "branch" or "stream" of Judaism, but there is a link between lower incidence of STD's and reproductive success[4].

A more forceful argument can be made for those who practice *niddah*. The laws of *niddah* proscribe sexual contact between a husband and wife to certain times of the woman's menstrual cycle. Not coincidentally, couples may engage in sexual intercourse only at the most fertile time of the woman's cycle. Indeed, they are prohibited from any intimate contact during the other times. This has both an emotional and biological effect. The emotional one is less of a concern for the current paper. However, given that the married couple engages in sexual intercourse at this time, it has a clear impact on their reproductive success[5].

In the context of the Jewish people, those who adhere to these, as well as other ritual practices tend to have more children. Indeed, the most pious Jews in the state of Israel represent the fastest growing sector of the Jewish population[6]. Moreover, to the degree that we can assume that the Orthodox Jews in the United States tend to adhere to these practices more than the members of the other streams, we can assume that this explains why this group is the fastest growing there as well[7]. It is hard to make similar assessments in Europe due to the tragedy that befell the Jewish people in the past century. Anecdotal evidence, however, seems to lend support to a similar trend among Europe's Orthodox Jewish population as well.

Finally, this can all be tied together based on the research of Richard Sosis[8], upon which I will expand below. Communities that place higher demands on their members tend to outlast others. To the degree that ritual demands on Jews have been a constant,

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success as measured by sheer numbers of offspring may be misleading when applied to any human sub-group. This gives greater importance to the within-species measures of success. All groups of Jews desire that *their* cultural memes become mainstream. Yet the more modern streams of Judaism attempt this primarily by education rather than by reproduction. The jury is still out, but the sociological predictions seem to be in favour of the latter.

[3] Center for Disease Control and Prevention, *Male Circumcision*, http://www.cdc.gov/hiv/malecircumcision/ [accessed: 20.12. 2012]; M. Konner, *The Jewish Body*, New York 2009; M. Konner, *Toward a Sociobiology of the Jews: Sexual Selection, Circumcision, and the Centrality of texts in a Coevolutionary Framework* [in:] *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*, R. Goldberg (ed.), Boulder 2009, p. 84–117.

[4] M. Konner, *Evolutionary Studies of Human Behavior: The Case of (Jewish) Religious Practice* (in print).

[5] R. Goldberg, *Biosocial Regulation of Husband and Wife. The Requirement for Periodic Conjugal Separation and Reunion* [in:] *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*, R. Goldberg (ed. Boulder 2009, p. 118–138; M. Konner, *The Jewish Body*..., M. Konner, *Toward a Sociobiology*...

[6] Y. Bistrov, A. Sofer, *Israel Demograhic: 2010–2030. On the path to a religious state*, http://web.hevra.haifa.ac.il/~ch-strategy/images/publications/demography_2010.pdf [accessed: 10.10.2012].

[7] S. Cohen, *Jewish Community Study of New York: 2011*, New York 2011.

[8] R. Sosis, *Religion and Intragroup Cooperation: Preliminary Results of a Comparative Analysis of Utopian Communities*, "Cross-Cultural Research" 2000, No. 34, p. 70–87; R. Sosis, *Why aren't we all Hutterites? Costly signaling theory and religious behavior*, "Human Nature" 2003, No. 14, p. 91–127.

and that membership historically in the Jewish people was primarily based upon behaviour and not belief, we can conclude that the evolutionary theories expanded upon below can be a contributing factor to Jewish survival. This may be the case when Jews are compared "inter-species", and it may be why the most pious continue to succeed genetically more than their less observant co-religionists.

Setting the stage: The social scientific study of religion

Three bio-psychological behaviours, when taken together, can further our understanding of the evolution of religious behaviours millions of years ago and why, despite scientific evidence and discovery to the contrary, religions continue to exist and even grow today. First, the concept of reciprocal altruism as introduced by Robert Trivers[9]. Second, costly signaling or handicaps as proposed by Amotz Zahavi[10] and, finally, Leon Festinger's cognitive dissonance theory[11].

The paper will begin with a brief survey of the two evolutionary concepts of signal theory and reciprocal altruism. We will then explore how these concepts have been applied to human cultural evolution – particularly religious evolution. Finally, we will explore a limited number of Jewish religious practices.

Humanity: social or cultural being

Baumeister, Bauer and Lloyd[12] in their study of religious behaviour draw a fine though important distinction between humans and the rest of the animal kingdom. They propose that humanity is not simply *social* like bees, ants, or dogs[13] We are *cultural*. Religion is a subset of this cultural legacy. Steven Pinker[14] teaches us how our brain structures give rise to this subtle yet profound difference. In short, our highly developed cortex allows for human metacognitive abilities that when coupled with

[9] R.L. Trivers, *The evolution of reciprocal altruism*, "Quarterly Review of Biology" 1971, No. 46, p. 35–57.

[10] A. Zahavi, *Mate selection -a selection for a handicap*, "Journal Theoretical Biology" 1975, No. 53, p. 205–214; A. Zahavi, A. Zahavi, *The handicap principle: a missing piece of Darwin's puzzle*, Oxford 1997.

[11] L. Festinger, *A theory of cognitive dissonance*, Stanford 1957; L. Festinger, Cognitive *dissonance*, "Scientific American" 1962, No. 20, p. 93–107.

[12] R.F. Baumeister, I.M.Bauer, S.A. Lloyd, *Choice, free will, and religion*, "Psychology of Religion and Spirituality" 2010, No. 2, p. 67–82.

[13] J. Graham, J. Haidt, *Beyond Beliefs: Religions Bind Individual into moral communities*, "Personality and Social Psychology Review" 2010, No. 14, p. 140–150; J. Maynard Smith, D. Harper, *Animal Signals*, New York 2003; R.L. Trivers, *Social Evolution*, Menlo Park, CA 1985.

[14] S. Pinker, *How the Mind Works*, New York 1997; S. Pinker, *The Blank Slate: The Modern Denial of Human Nature*, New York 2002.

available leisure time, associated primarily with humans, give rise to culture – activities that provide "meaning" in an otherwise meaningless system. Religions evolve because we seek agents who become the object of this meaning[15].

Reciprocal Altruism

According to theories of evolution, kin will help kin in order to increase the likelihood of passing its genes on to the next generation[16]. In his classic book, The *Selfish* Gene Richard Dawkins explains that the gene as a replicator has one "selfish" "goal": to ensure that it exists in future generations. It is not selfishness in the classic sense that explains this behaviour. Selfishness of that sort would require a consciousness not associated with lower mammals or reptiles or fish. Neither is a gene goal directed. Genes, even those belonging to sentient beings, are not sentient themselves. Rather, they are successful replicators, a virus if you will. The most "fit" gene can be described as the most efficient replicator. This efficiency is measured by the chance that the gene will survive to replicate itself.

When biologists discuss altruism, or its social "cousin" reciprocal altruism, they talk of a type of selfless behaviour, albeit with an expected pay back in the not so distant future[17]. Trivers explains the theory in his study of vampire bats. These bats live on the blood of other mammals. Like all animals, they get sick. On those occasions, the sick bat cannot leave its cave to hunt for blood. A bat that does not eat for even a period as short as 24 hours is in a perilous life-threatening situation. Trivers showed that the bats could remember those who were helped yet did not return the favour in future hunts. The individuals that did not help other sick bats on later hunts were labelled "cheaters" and the chance that they would be fed on subsequent occasions when they were sick was lower.

Costly signals

Most complex species combine the use of index signals and handicap signals when they engage in ritualistic behaviours[18]. According to evolutionary theory, an index is an unfakeable signal. The depth of the croak of certain frogs is an example of an index; it is always in direct relation to the size of the frog. The handicap principle suggests that reliable signals must be costly to the signaller, costing the signaler

[15] See e.g.: S. Atran, A. Norenzayan, *Religion's Evolutionary Landscape: Counterintuition, commitment, compassion, communion*, "Behavioral and Brain Sciences" 2004, No. 27, p. 1–58; J.L. Barrett, *Why Would Anyone Believe in God?*, Walnut Creek, CA 2004.

[16] R. Dawkins, *The Selfish Gene*, New York 1976; R.L. Trivers, *The evolution of reciprocal altruism*..., R.L. Trivers, *Social Evolution*...; R. Wright, *The Moral Animal: Why we are the way we are*, New York 1994.

[17] R.L. Trivers, *The evolution of reciprocal altruism*…

[18] J. Maynard Smith, D. Harper, *Animal Signals*...; R.L. Trivers, *Social Evolution*…

something that could not be afforded by an individual with less of a particular trait[19]. These rituals help maintain hierarchies[20], enhance communication and lead to successful courtship and mating. The rituals are fixed complex patterns[21], though there may be certain variation from one generation to the next[22].

There is no need to expand upon Zahavi's[23], theory here, other than referring to the classic examples of peacocks' tails and reindeers' antlers. It is a waste of evolutionary resources and a self-endangering characteristic for a peacock to grow a tail that is, on the one hand, so colourful, but on the other, so heavy. The weight of the tail is an impediment to survival to the degree that its bearer would have a harder time in either flight or fight. The reindeer's' heavy antlers provide a similar handicap. The antlers' weight and bulkiness make it difficult to manoeuvre in the wild. The male that can afford either the antlers or the plumage signals that, despite the costliness of the attribute, they are still fit to survive.

From signal to ritual

Maynard Smith and Harper[24] explain how animal rituals may come about. In their study of various species, they assert that rituals are stylised or exaggerated forms of movements that naturally occur when a member of the species initiates action. The ritualised behaviours may have nothing to do with the initial goal of the action.

Animal rituals as a metaphor for human rituals

How then do we apply these biological theories to humans? We have neither tails nor antlers. We do not, in general, eat each other, though we do engage in mating and warring behaviours. The question of the application of these theories to human behaviour in general and to religious behaviour in particular becomes important when we search for the members of our self-defined in-group for purposes of mating and culture making.

For more than two decades, anthropologists have applied signal theory to human behaviour[25]. Donath[26] claims in her study of virtual social networks claims that hu-

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[19] A. Zahavi, *Mate selection -a selection for a handicap…*; A. Zahavi, A. Zahavi, *The handicap principle: a missing piece of Darwin's puzzle…*

[20] R.L. Trivers, *Social Evolution…*

[21] J. Maynard Smith, D. Harper, *Animal Signals…*

[22] R.L. Trivers, *Social Evolution…*

[23] A. Zahavi, *Mate selection -a selection for a handicap…*

[24] A. Zahavi, *Mate selection -a selection for a handicap…*

[25] L. Cronk, *The Application of animal signaling theory to human phenomena: some thoughts and clarifications*, "Social Science Information" 2005, No. 5, p. 603–620.

[26] J. Donath, *Signals in Social Supernets*, "Journal of Computer-Mediated Communication" 2007, No. 13/1, article 12, http://jcmc.indiana.edu/vol13/issue1/donath.html [accessed: 9.10.2012].

mans must rely on complex signals as we must make snap decisions and have little information on which to base these decisions. She notes that many virtual networks require a great deal of information in order to join.

Bliege Bird and Smith[27] clarify how many of our very human behaviours are indeed signals – be they indices or handicaps. Those who engage in these behaviours often gain social standing despite, perhaps paradoxically, a lowering of their own individual prestige. In their review, they also explore a number of socio-cultural behaviours according to the theory of reciprocal altruism. They contend that it motivates hunters to share the spoils of their hunt, encourages families in less traditional cultures to provide extravagant feasts in the context of some life cycle event with the implicit societal expectation is that they will receive the same in return at some later date

Finally, Zahavi[28], Cronk[29], Donath[30], Bliege Bird[31] and Mahoney[32], among others, make the leap from animals to humans by asserting that social prestige is evolutionary capital gained from the uniquely human signals. They explore the literature to assert that behaviours varying from public generosity to extravagant piety are indeed forms of social competition. The elaboration of all areas of human signalling is not the focus of the current paper. Suffice to say that there is extensive literature from both anthropology and psychology that says that we indeed do employ signals and reciprocal altruism. Moreover, the realms in which these signals act are numerous. In short: we give in order to get when we need. We pray in order to prove our worthiness.

> Thus, signaling honest and detailed information about one's quality requires handicaps. The same signals that display accurately the superiority of one signaler will display accurately the inferiority of others. Therefore, the purpose of the handicap is to help provide reliable information that the receiver needs that would otherwise not be available[33].

> Consider someone who regularly attends *shul* [synagogue]. According to my earlier argument, by attending *shul* one indexically signals the acceptance of the moral strictures that are the foundation of the synagogue's theology[34].

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[27] R. Bliege Bird, E.A.Smith, *Signaling Theory, Strategic Interaction and Symbolic Capital*, "Current Anthropology" 2005, No. 46, p. 221–248.

[28] A. Zahavi, *The Handicap Principle in Human Social Interaction* [in:] *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*, R. Goldberg (ed.), Boulder 2009, p. 166–172.

[29] L. Cronk, *The Application of animal signaling theory*...

[30] J. Donath, *Signals in Social Supernets*...

[31] R. Bliege Bird, E.A.Smith, *Signaling Theory*...

[32] A. Mahoney, *Theological Expressions as Costly Signals of Religious Commitments* [in:] *The Evolution of Religion, Studies*, *Theories & Critiques*, J. Bulbulia, R. Sosis, E. Harris, R. Genet, C. Genet, K. Wyman, (eds.), Santa Margarita, CA 2008, p.161–166.

[33] A. Zahavi, *The Handicap Principle in Human Social Interaction*..., p. 169.

[34] R. Sosis, *Why are Synagogue Services so Long? An Evolutionary Examination of Jewish Ritual Signals'* [in:] *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*, R. Goldberg (ed.), Boulder 2009, p. 209 [italics in original, brackets mine – P. S-F.]

Bio-psycho-social perspectives on religion

Daniel Dennett and Richard Dawkins assert that for years religious thinkers have claimed to be beyond or even above examination by the same tools employed in the study of other social phenomena[35]. They find this claim to be irrelevant at best and harmful as worst. For even if some gain psychological support from religion, as a society we should be able to provide this support through other socio-cultural vehicles. Sequestering one's theory from the social-scientific inquiry, contend Dawkins and Dennett, is wrought with paranoia for fear of being exposed as false.

This paper assumes a basic understanding of Richard Dawkins' evolutionary biology theory presented in his classic book *The Selfish Ge*ne (1976). It also assumes the basic premise of mimetic evolution. "Memes," he said, "are tunes, ideas, catch phrases, clothes fashions… Just as genes propagate themselves by leaping from body to body via sperm or eggs, so memes propagate themselves by leaping from brain to brain via a process, which… can be called imitation[36]. Dawkins supposes that the idea of a god or gods is a meme in the classic sense. He is not sure when the idea first appeared, assuming that it appeared in different places at different times. Yet in as much as God cannot be measured scientifically, it is a meme.

To expand upon the vehement opposition Dawkins has met is not necessary in the current context. However, it should be clear that this opposition predated Dennett and Dawkins by nearly 1000 years. Maimonides, the medieval Jewish religious thinker codified as law the attitude that God's ways are beyond human scrutiny:

> The Holy blessed One does not know with a knowledge that is external from Him as do men, whose knowledge and selves are two [different entities]. Rather, He, may His name be praised, and His knowledge are one.
>
> Human knowledge cannot comprehend this concept in its entirety for just as it is beyond the potential of man to comprehend and conceive the essential nature of the Creator, as [Exodus 33:20] states: "No man will perceive Me and live," *so, too, it is beyond man's potential to comprehend and conceive the Creator's knowledge* (*Mishne Torah, Laws of Teshuva 5:5*, in original Hebrew, italics and brackets mine)

Indeed, Dennett has had this critique levelled at him directly as proof of why religious practice and beliefs and God should not be studied:

> One reader… complained… that by treating the hypothesis of God as just one more scientific hypothesis, to be evaluated by the standards of science in particular and rational thought in general [he and Dawkins] are ignoring the very widespread claim by believers in God that their faith is quite beyond reason, not a matter to which such mundane testing applies[37].

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[35] R. Dawkins, *The God Delusion*, London 2006; D. Dennett, *Darwin's Dangerous Idea: Evolution and the Meanings of Life*, New York 1995; D. Dennett, *Breaking the Spell, Religion as a Natural Phenomenon*, New York 2006.

[36] R. Dawkins, *The Selfish Gene…*, p. 192.

[37] D. Dennett, *Darwin's Dangerous Idea…*, p. 153.

Some ten years later, in *Breaking the Spell* Dennett (2006) still found it necessary to elaborate what he meant when he ventured into his study of religion. His approach to religion is as a natural phenomenon, that is, emanating from nature. By "natural", he does not mean that religion is an artefact or spandrel, as do many other scientists who study religion[38]. It is transmitted culturally. Religion is natural in the same way that sports or cancers are natural. "It is a human phenomenon composed of events, organisms, objects, structures, patterns, and the like that all obey the laws of physics or biology…"[39].

The "holier than thou, we are beyond study" attitude espoused by religious thinkers has, perhaps, been its own downfall. By claiming to be a social phenomenon but claiming to be above investigation, the aloof attitude has turned away many potential allies. Dennett directly assails this attitude. He asserts that just as religions represent social phenomena, they ought to be subjected to the same rigorous study to prove its truth or falsify their foundations.

When Dennett[40] asks the questions: "can science study religion? " and "should it?", his answers are compelling, although they may be considered self-evident. To answer the first question, Dennett restates his assertion that religion is a natural social phenomenon and can be studied. Indeed, he reminds us that until Darwin's time, religion was the focus of a great deal of scientific inquiry.

The current review does not claim to be more objective or broader than others that came before it. However, it is written by someone who lives a life fulfilled by religious practice informed by non-fundamentalist belief alongside a respect for scientific enquiry of wonder and awe of human nature, its follies and foibles.

Building community

If God does exist, would God not create humans with a mind that seeks God? This indeed is a poignant question. The issue revolves around the existence of yet another intangible: the mind. We feel that our minds exist. However, I have never seen one; brains, yes, minds, no. Many consider this mind to be an epiphenomenon of the physical structure of the brain[41]. One that evolved over millions of years to solve the problems of survival in the savannah or rain forest. This section will explore, briefly, our cognitive faculties that may give rise to a belief in supernatural agents – a deity – a god or gods.

Many theories have been put forth to explain why this particular mind exists. The bearer of a mind that seeks animate agents or causality has a greater chance of evolutionary survival. This mechanism has been termed the hyperactive agent-detecting

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[38] S. Atran, A. Norenzayan, *Religion's Evolutionary Landscape*...; J.L. Barrett, *Why Would Anyone Believe in God?*...

[39] D. Dennett, *Breaking the Spell, Religion as a Natural Phenomenon*..., p. 25.

[40] *Ibidem*.

[41] S. Pinker, *How the Mind Works*...

device (HADD)[42]. In this light that many students of the evolutionary study of religion see God as well[43]: God's existence is a byproduct of evolution[44]. Put succinctly: if I hear a sound from behind the bush and attribute it to a snake or a bear or lion, that is my minds solves the unknown source of the disruption by assuming an animate cause, and I run, I stand a better chance of passing my genes on to the next generation. If it turns out to be the wind, not much is lost (unless I unwittingly run into another lion) If on the other hand I assume the cause to be the wind and it is in fact a lion, then I become lunch rather than an efficient replicator. If I assume the existence of an omnipotent God and can convince others of my belief then I will improve my biological fitness and replicate (reproduce) with greater success.

Atkinson and Bourrat[45] have shown that beliefs in supernatural monitoring of behaviour and punishment promote compliance with social-cultural norms. Their underlying assumption is that one of the difficulties in ascertaining honest participants in cultural groups is policing. In addition, the ability to discern cheaters is another important factor in establishing group cohesion. This can perhaps explain why an idea such as God may have evolved in the minds of humans, whose primary goal was survival. As a result, groups need to know who was *really* part of the group and who was trying to get a free ride for purposes of protection, cooperation and reproduction. One can *promise* to show up for tomorrow's hunt[46].

Graham and Haidt[47] review data that support the theory that members of religious groups tend to be more generous and happier. They also view religion as an effective means to achieve moral community. By strengthening the in-group binds, religion is particularly able to identify those who would fake religiosity. Perhaps by the policing mechanisms noted above by Atkinson and Bourrat[48] or perhaps by requiring beliefs that are too difficult to fake[49].

Richard Sosis[50] also studied the communal impact of religious behaviour. He and his colleagues analysed the staying power of communal settlements over the 18th

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[42] J. L. Barrett, *Why Would Anyone Believe in God?*, S. Pinker, *How the Mind Works*…

[43] J. Dow, *How evolution created God: The Search for the origins of religion*. *Paper presented at the 86th Annual Meeting of the Central States Anthropological Society*, Champaign-Urbana, Illinois, 2–5April, 2009.

[44] J. Bulbulia, *Religious Costs as Adaptation that Signal Altruistic Intention*, "Evolution and Cognition" 2004, No. 10, p. 19–42.

[45] Q.D. Atkinson, P. Bourrat, *Beliefs about God, the afterlife and morality support the role of supernatural policing in human cooperation*, "Evolution & Human Behavior" 2011, No. 32, p. 41–49

[46] R. Sosis, *Religion and Intragroup Cooperation: Preliminary Results of a Comparative Analysis of Utopian Communities*, "Cross-Cultural Research" 2000, No. 34, p. 70–87; R. Sosis, *Religious Behaviors, Badges, and Bans: Signaling Theory and the Evolution of Religion* [in:] *Where God and Science Meet: How Brain and Evolutionary Studies Alter Our Understanding of Religion*, vol. 1: *Evolution, Genes, and the Religious Brain*, P. McNamara (ed.), Westport 2006, p. 61–86.

[47] J. Graham, J. Haidt, *Beyond Beliefs*…

[48] Q.D. Atkinson, P. Bourrat, *Beliefs about God*…

[49] R. Sosis, *Why aren't we all Hutterites?*…

[50] R. Sosis, *Religion and Intragroup Cooperation*…; *Idem*, *Why aren't we all Hutterites?*…

and 19th centuries[51]. They found that the communes that had a religious foundation maintained their communal nature for longer periods. They surmised that it was the ritualised interaction between members that kept them together longer.

Bulbulia and Mahoney[52] studied the religious altruism of Christians in New Zealand. In a series of studies, they found that Christian New Zealanders were more likely to donate to Christian Canadians than they were to support other non-Christian New Zealanders. This finding confirms the notion that religious identification helps to inform group cohesion and that it is a powerful sign and signal of an in-group worthy of sponsorship.

Sosis, together with Bradley Ruffle[53] also studied Israeli kibbutzim. They found that there was a direct relationship between religious behaviours and cooperative behaviour. Religious males, who in Orthodox Judaism "sacrifice" the most time in order to signal their religiosity score highest on measures of cooperative behaviour compared to religious females, secular males and secular females. In addition, religious men who engage the most in ritual behaviours tend to exhibit the trait we call cooperation more than the other groups. Finally, the religious kibbutzim tend to stay true to their socialist foundations longer than non-religious kibbutzim[54]. Taken as a whole, the studies above give us an insight into what people are willing to do in order to retain group cohesion and identity.

One limitation is worth noting, though it is primarily methodological. We often confuse correlation studies as providing cause-and-effect results. It is crucial to keep in mind that the correlations noted do not prove that increased religious behaviour leads to increased cooperativeness. They say that these two behavioural traits vary in concert with one another. Perhaps the casual direction is reversed: cooperative people tend to find themselves in ritualistic or religious communities.

Another possible interpretation might be that there is another underlying trait or tendency that predicts these two variables. Whatever the "true" scientific explanation, the findings from the above data can help us to understand the seeming innate and natural development of religious behaviour. Humans are social-cultural beings. In order to express that need, in order to survive, we developed, long ago, systems to keep people together and to help us know who was with us and who was "agin' us". Or, those who pray together stay together.

In summary, religion communicates reliable information so that I can know who is part of my group. The main components are costly signalling and reciprocal altru-

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[51] R. Sosis, A. Candace, *Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior'*, "Evolutionary Anthropology" 2003, No. 12, p. 264–274.

[52] J. Bulbulia, A. Mahoney, *Religious Solidarity: The Hand Grenade Experiment*, "Journal of Cognition and Culture" 2008, No. 8, p. 295–320.

[53] B.J. Ruffle, R. Sosis, *Does It Pay To Pray? Costly Ritual and Cooperation*, „The B.E. Journal of Economic Analysis & Policy" 2007, No. 7, article 18, http://www.bepress.com/bejeap/vol7/iss1/art18 [accessed:10.09.2012].

[54] R. Shapira, *Communal decline: The vanishing of high-moral leaders and the decay of democratic, high-trust kibbutz cultures*, "Sociological Inquiry" 2001, No. 71, p. 13–38; R. Shapira, *Academic Capital or Scientific Progress? A critique of studies of kibbutz stratification*, "Journal of Anthropological Research" 2005, No. 61, p. 357–380

ism. As a result, I will be more trusting of and more willing to help in-group members. The assumption is that if someone is willing to make the effort to identify as religious, they probably are religious and we share their same mimetic values. Just as I want my genetic progeny to come into the world, so do I want my mimetic progeny. Those who share these beliefs will most reliably help me pass on my memes.

Identifying religious identification

Richard Sosi[55] consolidates the types of signals sent by humans in general and religious humans in particular. He claims that in order to integrate fully into the religious fabric I must possess some combination of three socio-religious signals: behaviours (rituals) badges (religious garments) and bans (forbidden actions). These three when combined send a very powerful message to their beholders. The message is that I am truly part of your group. Why else would I pray every day, why else would I attend church or synagogue or the mosque. Life would be much simpler without them.

The badges are often multi-faceted signals, too. For example, the *tallit* (prayer shawl) is, in certain Jewish communities, as reliable sign of marital status. The style and size of a yarmulke worn by Jews conveys certain political and social information as well.

Finally, group cohesion is strengthened by the bans. To be sure, the bans tell me what NOT to do. However, the more important message of the religious bans is that we want to avoid contact with those who would otherwise eat, drink, and sing different melodies

Sosis[56] states the problem explicitly: evolutionary theory predicts that biological beings will do what they can to preserve limited resources. There may be reason to believe that a member will share his resources – food and cover – with other members of his group. But why would anyone voluntarily sacrifice valuable resources to an invisible deity? Why would someone sacrifice a bull, a lamb or even a turtle dove that could otherwise be used to provide valuable nutrition? Why would a society spend its time energy and resources producing dye for a priestly class? If a certain animal were available for consumption, why would members of a group *not* eat it simply because it was on the wrong list or because it was not slaughtered properly?

The answers to the above questions may be studied with the components of signal theory and reciprocal altruism. I want to belong to the group so I do these things in public to proclaim my willingness to be part of the group and reap the group benefits of membership. Then another question arises: why would a member of the group perform rites and rituals in the privacy of their own home?

Here we need to return to one of the classic theories within social psychology: cognitive dissonance. The theory states succinctly "if a person is induced to do or say something which is contrary to his private opinion, there will be a tendency for him

[55] R. Sosis, *Religious Behaviors…*

[56] *Ibidem*; R. Sosis, C. Alcorta, *Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior*, "Evolutionary Anthropology" 2003, No. 12, p. 264–274.

to change his opinion so as to bring it into correspondence with what he has done or said"[57].

When cognitive dissonance is added to the mix, a fairly complete picture of religious observance comes into focus. As noted, a deity policing our behaviours[58] is a common belief in most religions. This deity's existence is beyond proof. However, individuals tend to be internally honest – not wanting to lie to themselves. We do, indeed, have the power of deception and self-deception[59] (but if we can be true to ourselves then we tend to be better off.

Inasmuch as Jewish rituals are practiced both in the public and private spheres, there will also be intra-personal pressure to ensure that meals taken at home, prayer recited at home, candles lit in private are within the bounds of religious observance – in the absence of a policing community, and potentially in the absence of a policing God. When I signal my group members I gain personal benefits. It is important for them to see me dress appropriately (badge) pray aloud (behaviour), and refrain from pork (ban). But why at home? Even more importantly, why at home when I have no reason to believe that anyone will check?

Because I check. And I am honest. It would be too hard to conform to certain expectations if I did not buy into them[60]. However, once I do behave a certain way I have actually convinced myself that this is the best way to behave[61]. I behave therefore I believe. This belief in turn leads to more behaviours until, finally, I am prepared to perform rituals even when I am alone, and even if I doubt that God actually polices my compliance.

Richard Sosis puts it succinctly:

> The three B's primarily communicate group commitments, but in addition they indexically signal acceptance of the community's moral codes. They are effective signal because their costliness ensures their reliability. Adherents are able to endure their costliness because repeated performance of religious activities can foster the belief in the theologies, which provide enduring meaning for the practices by arousing emotions and generating dissonance[62].

The culture that succeeds in prescribing rites and rituals and proscribing activities and assists its followers to convince themselves of the righteousness of their actions will create a successful religion that will mimetically replicate itself for generations to come.

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[57] L. Festinger, J.M. Carlsmith, *Cognitive consequences of forced compliance*, "The Journal of Abnormal and Social Psychology", 1959, No. 58, p. 209.

[58] Q.D. Atkinson, P. Bourrat, *Beliefs about God*...; A. Mahoney, *Theological Expressions as Costly Signals*...

[59] S. Pinker, *How the Mind Works*; R.L. Trivers, *The evolution of reciprocal altruism*...; R. Wright, *The Moral Animal*...

[60] R. Sosis, *Why aren't we all Hutterites?*...

[61] L. Festinger, *A theory of cognitive dissonance*...; *Idem*, *Cognitive dissonance*…

[62] R. Sosis, *Religious Behaviors*..., p. 83.

Bio-psychology of Jewish religious practice

What follows is a brief examination of certain Jewish religious practices. It is not meant to be comprehensive; rather it is an initial attempt to examine few practical rituals with the theoretical framework. It will be important to keep in mind the different currencies of human-religious culture. There is of course the tangible currency of the time – food from both animal and plant sources. Nevertheless, equally, if not more important is the currency of socio-cultural position and prestige. The reward may not be objectively measureable, but the subjective value is of utmost importance. We will start with certain laws set out in the Torah. We will then explore a number of rituals from the Rabbinic period (1st century BCE to 6th century CE). The final step will be a look at certain medieval sources for Jewish practice.

Jewish cultic practice

The most obvious signal is that of animal sacrifice. Torah law commands Israelites to set aside a portion of their earnings for *hekdesh*, an offering brought to the Temple in Jerusalem as a manner of worship. The process lasted over the life of the fields and herds requiring landowners to bring tithes to the Temple on at least three annual occasions.

Leviticus 27 v 9-10 reads as follows:

> And if it be a beast, that men bring an offering unto God, all that any man give unto God shall be holy. He shall not alter it, nor change it, a good for a bad, or a bad for a good; and if he changes a beast for beast, then both it and that for which it is changed shall be holy.

What is being signalled? That is, what is the cultural benefit of the signals being sent? At first blush, it seems self-explanatory. The more God has blessed me, the more I must give in return for this blessing. The bigger my herd, the more bountiful my harvest, the more grateful I am to God. But perhaps the reverse is true. Perhaps God "commands" what is good for society[63].

Yet there is much more. The Israelites were commanded to bring most of the sacrifices at the same time of the year. The three pilgrimage festivals were a time when many came to Jerusalem to pay their dues. The Bible tells us that King Solomon apparently played on the natural process of cognitive dissonance in order to strengthen his hold over the people. If I bring one-tenth of my holdings each year to Jerusalem, then, according to the theory of cognitive dissonance, I must feel that Jerusalem is central to my being, as is the king in Jerusalem. Additionally, Solomon had to signal to other kings that he was well protected. So, those who would fight against me beware. I have a large treasury that can wage war against any enemy.

[63] S. Stewart-Williams, *Darwin, God and the Meaning of Life: How evolutionary theory undermines everything you thought you knew*, Cambridge 2010.

But we digress. The other signals are the ones between the pilgrims to Jerusalem. The greater my offering, the wealthier I am. As such the better it would be to marry your daughters to my sons and ensure well cared for progeny in the future. If I can afford to bring 10 oxen, four sheep and various sundry items, then I can afford even more.

The laws of *temurah* heighten this point. Each Israelite is encouraged to make voluntary offerings to God at the temple. But what happens if the designated animal or plant gets lost in my stock? After all, I cannot brand an animal or otherwise damage fruit from the tree – it invalidates it for sacrificial purposes. The simplest solution is to swap the offering with another. Yet the Torah teaches that I must bring both the original and the replacement. In other words, I am rich enough to lose track of one of my animals and make the donation anyway. The bio-cultural message is that I am worthy of your consideration and you should send your children to meet me or my children.

Priestly garments

As in all early societies, the Bible tells of a caste-based society. In its time, it would seem to be a waste – a costly signal – to colour garments. Many biblical scholars[64] presume that clothes at the time of the Bible were what we call earth tones today – the colour that the wool or leather is when it is removed from the animal. However, certain articles of clothing were supposed to be dyed certain colours, in this case light blue or azure. Israelites were commanded to dye one string on the fringes they were ordered to attach to their clothing. However, the high priest's clothes were nearly 60% azure. That in and of itself may be of no concern until we are told that the dye was to be taken from a particular snail common to the ancient land of Israel. Despite its commonness, it would still take a great deal of means and skill to produce the dye. The clear message is that I am of the wealthier caste, and it would be to your benefit to marry into my family.

Indeed, it was considered a special honour to marry into the priestly class. That gave one access to the sacrifices brought on the regular pilgrimages to Israel. Even if the narrative in the Torah is not historically true, the idea that the high priest, the regular priests and others were commanded to dye part or all of some garments sends an important message: we priests can waste our resources on the costly signals of red, purple and blue.

Further, the fabrics used to produce the clothing were also a signal. Priestly garments were *shaatnez* – an intermingled weaving together of linen and wool. In general, this combination is forbidden. But, *shaatnez* was common in priests' clothing in the ancient Near East in general and in Egypt and Canaan in particular[65]. *Shaatnez* was a costly signal of status at the time. Apparently, it is not so simple to weave these textiles together and the ability to do so took, at the time, a great deal of skill. As such it was reserved for the wealthy – in biblical times the priests.

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[64] E.g. C.M. Carmichael, *Law, legend, and incest in the Bible: Leviticus 18–20*, Ithaca 1997.

[65] *Ibidem*.

According to Israel Knohl[66], a modern Israeli biblical scholar, one of the smaller but more influential nomadic tribes that eventually joined forces with other nomads of the time to form what we call today the ancient Israelites was from Egypt. Indeed, Knoll theorises that they came from the priestly class of Egypt, who were expelled because of their monotheistic belief system. The Torah explicitly instructs the high priest to wear *shaatnez* and dye their clothes. To the degree that it was easy to recognise, Carmichael points out, it was a clear badge of honour to wear *shaatnez* coloured azure. And your station would be recognised quickly as well.

Diet

The diet prescribed in the Torah bears great similarity to that of other Near Eastern people[67]. One dietary restriction sets this ban apart from other cultures of the time: the pig. Walton, Matthews and Chavalas note that some cultures included pigs in their cultic practice. Either way, the pig quickly became the symbol of impurity in the Jewish dietary laws.

This restriction was clearly community building. It was used by the rabbis of the early *tanaitic* period (1st century BCE to 3rd century CE) as the symbol of all evil: stay away from the pig lest those who eat it assimilate you into their culture. The dominant conquering cultures of the time were often associated with pigs in the early rabbinic literature (*Midrash Rabba* [the great midrash] *Genesis Rabba* 25). The implication, then, all things considered tainted by the swine are avoided, the Israelite – ultimately Jewish culture – will continue to thrive in the face of its arch cultural enemy of the time, Rome.

Talmudic period

The above examples may be somewhat simplistic or even obvious to those who read the Bible. Whether we treat the Bible as an historical account of actual happenings or a document redacted from many sources over time, its mission was to create a culture. A meme with many adherents who will make many people, be fruitful, multiply, and fill the earth.

The same may be said of the treatises that comprise rabbinic literature composed between the 1st century BCE and the 6th century CE. Indeed, the Rabbis at the time of the end of the Second Temple period (1st–2nd century CE) had a formidable task. They had to take the Israelites into exile, yet make sure that there would be strong enough group cohesion to keep the new Jews together.

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[66] I. Knohl, *The Bible's Genetic Code*, Or Yehuda 2008.

[67] J.H. Walton, V.H. Matthews, M.W. Chavalas, *The IVP Bible Background Commentary: Old Testament*, Downers Grove, Il, 2000.

Intuitively, they built upon the cultic practice and took advantage of human nature to devise a system of rites and behaviours that have lasted two millennia or more. They built it upon HADD theory[68], the notion that we seek agents, and combined it with ideas that are only minimally counter intuitive[69]. This latter concept deserves some explanation. It assumes that human intuition can only tolerate a certain degree of counter intuitive beliefs. After crossing that line, the believers will cease to believe – because the belief runs too far afield to be possible.

As rabbinic Judaism has become normative Judaism, the rites and rituals that emerged from that culture must be the primary focus of any serious study of the impact of Jewish religious practice. The rabbis of the Talmud needed to redefine cultural currency. Israel could no longer signal their allegiance with sacrifices offered at the Temple in Jerusalem. The most readily available currency was time. In order to signal my worthiness, I must be willing to "waste" my time, as I could no longer waste my food. This is "waste" according to Zahavi's costly signal theory indicated above.

Time: Jewish prayer and study ritual

The first *Mishna*, the basic legal codex edited in the 2nd century C.E. and codified at the beginning of the 3rd, asks: "From when may we recite the *shema* in the evening?" (*Mishne, Berachot* 1:1) The fourth chapter sets time guidelines during which daily prayer is most acceptable. The signal, then, is that despite other seemingly important things to do, I must "waste" my time in order to prove that I am a worthy member of society. Indeed, the more time I spend in prayer, the more pious I must be. The more pious means that I have more means at my disposal and do not need to spend *my* time attending to them. Either my servants will do it or I have so much that, it is really not necessary that I attend to my business.

Jewish prayer behaviour has multifaceted evolutionary value. Attendance at services sends costly signals, invokes reciprocal altruism, and exhibits badges and bans all in one ritualistic practice. The average morning service on a weekday can take between 30 and 45 minutes. Services on the Sabbath and holidays can run anywhere from 1.5 hours to four[70]. Though shorter, each lasting 10 to 15 minutes, the afternoon and evening services require participants to sacrifice work and or family time. Again, the signal of willingness to sacrifice the currency of time comes in place of the sacrifice of other tangible resources – I signal the commitment to community. In as much as certain prayers require a quorum of ten attendees, they also signal their willingness to reciprocity.

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[68] J.L. Barrett, *Why Would Anyone Believe in God?*; S. Pinker, *How the Mind Works*...

[69] S. Atran, A. Norenzayan, *Religion's Evolutionary Landscape*...

[70] Average times are based upon mainstream services i.e. modern orthodox and conservative. There are sects that take longer. Ultra-orthodox services may be longer. Indeed, they tend to be more involved in costly signals; R. Sosis, *Why are Synagogue Services so Long? An Evolutionary Examination of Jewish Ritual Signals'* [in:] *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*, R. Goldberg (ed.), Boulder 2009, p.199–233

The time spent by an average service attending Jew is great. This is most interesting in the light of Western societal evolution. Until just one generation ago, perhaps two, the cost of attending Shabbat services was time spent out of work. It was a signal sending the message that I am willing to sacrifice trade and income for the sake of the community. Enter altruism. Today, in many communities, the currency of time is paid from leisure time. Leisure time is seen as even more valuable in many Western cultures than work time. That one is willing to refrain from leisure is quite a powerful signal to the members of the community.

Further, much esteem is afforded to those who are considered worthy to lead the congregation in the many forms of prayer. The time spent perfecting these skills is yet another sign of what one is willing to sacrifice to be a member of the community, which in turn, lest we forget, signals worthiness for marriage – either their own or of their children. If I come regularly to synagogue, lead the service well, read expertly from the Torah, then my children or I are worthy mates.

The altruistic side of synagogue attendance is spelled out above. But what of reciprocity? Members are altruistically willing to sacrifice time to participate, but where is the second crucial feature of communal evolution as set forth by Sosis[71] and others? Anyone who has even attended services regularly will immediately be able to recognise the cheats. They are those who come late. Their signal is clear. Yes, I am willing and able to sacrifice this much work or leisure, but no more. They are easy to spot.

The currency payback in the synagogue is honour – honour given to those, who would lead. However, if those members lead "too often" they are akin to the bats that stay back night after night feigning illness to gain from their kin's hunt. With certain exceptions to the hierarchy of who "ought" to lead the service, if one person receives too many, they are seen as cheats. They will be scorned and disparaged for hoarding too much of the precious resource (honour) garnered by their willingness to invest too much time in perfecting their leadership skills. To be sure, there are mimetic differences from community to community. Some hire professionals to do some of the major tasks. These professionals are often rewarded with respect – attaining access to the precious resource of reproductive offers. Nevertheless, there are always the honours to be handed out. In addition, those who take too much, without giving in return by allowing others an opportunity to signal are quickly labelled cheats. They take too many of the honours that are available, honour being the resource comparable to the blood shared by the bats.

Jewish prayer not only fulfils the behaviour component according to Sosis[72]. There are also significant badges and bans. The *talit* (prayer shawl) and *tefillin* (phylacteries) are the most obvious badges. Indeed, these badges will often serve as signals of expendable wealth to the degree that they are elaborate. Prices can vary greatly as can size. In certain communities, the *talit* is worn only by married men – its absence signalling availability status. The size and make of the *tefillin* also signal worthiness. Anyone who knows a Jewish family who has purchased *tefillin* for a son or in certain

[71] R. Sosis, *Religious Behaviors, Badges, and Bans…*; R. Sosis, *Why are Synagogue Services so Long?…*

[72] R. Sosis, *Religious Behaviors, Badges, and Bans…*

cases for a daughter, knows how much thought can be placed into their purchase. The Torah teaches that Jews must bind what are essentially amulets to their arms and place similar amulets on their heads each day. These amulets can range in price from $125 to $1500 or more. This is in Richard Sosis'[73] terms a true badge – a sometimes very costly signal that I wear literally on my sleeve for others to see what sort of financial handicap I am willing to place on myself in order to signal my worth. And this is generally done at a public prayer service among the peers to whom I signal.

There are many more badges that can be noted, but the scope of this paper does not permit further elaboration.

The third and final B – the bans according to Sosis – varies from one community to the next. As a rule, non-Jews are banned from most roles in most synagogues. The more liberal the community, the more a non-Jew will be invited to participate, but all communities do ban non-Jews from certain aspects of Jewish prayer.

Torah study is another handicap or costly signal behaviour[74]. The currency by which Torah study is attained is time. The more time one spends learning, the greater the honour accorded. Honour, in turn, translates into marriageability. In fact, Maimonides codifies it to the law that one should stay close to the righteous Talmid Hacham, feed him and learn from his ways (*Book of Commandments* Positive commandment no. 6; *Hilchot Deot* 6:1-2), a father should seek a *Talmid Hacham* for his daughter to marry (ibid). Much has been written lauding Torah study as a worthy pursuit that confers esteem to those who excel at it. The particular topics of Torah study reflect mimetic differences between communities. Nevertheless, no matter what group the scholar calls home, his or her scholarship affords access to certain communal resources that are otherwise unavailable to the Torah laity.

The obvious critique of this paper is that it is parochial. It is obvious that Jews will care about other Jews and that they will do what it takes to signal them. But we will conclude with a final moral/ethical directive from Talmudic times that is taken seriously in today's non-fundamentalist Jewish world. And it goes directly to D.S. Wilson's and E.O. Wilson's maxim, "Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary"[75].

The rabbis of the Talmud taught that there are many things Jews must do for their non-Jewish neighbours *Mipne Darchei Shalom* – for the sake of peace. Jews are taught that they must heal the non-Jewish sick *Mipne Darchei Shalom*. Jews must bury the non-Jewish dead Mipne Darchei Shalom. They must ask after their welfare and wish them well on their holidays Mipne Darchei Shalom. Jews must even donate charity to non-Jewish poor Mipne Darchei Shalom (*Babylonian Talmud, Tractate Gittin p.60b*).

There are over 2,500 references to this motivation in rabbinic literature. This may explain how the Jewish religion has survived for more than 2,500 years, despite all odds. Indeed, according to Wilson and Wilson, any religion, that preaches altruism, seems destined to outlast those non-altruistic groups.

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[73] *Ibidem*.

[74] A. Mahoney, *Theological Expressions as Costly Signals…*

[75] D.S. Wilson, E.O. Wison, *Rethinking the Theoretical Foundation of Sociobiology*, "The Quarterly Review of Biology" 2007, No. 82, p. 335.