Where the Gods Dwell: A Research Report

Abstract
Are the places that superhuman beings purportedly act and dwell randomly or arbitrarily distributed? Inspired by theoretical work in the cognitive science of religion, descriptions of superhuman beings (e.g., ancestors, demons, ghosts, gods, spirits) were solicited from informants in 20 countries on five continents, resulting in 108 usable descriptions, including information about these beings’ properties, their dwelling location, and whether they were the target of rituals. Whether superhuman beings are the subject of religious and ritual practices appeared to co-vary in relation to both features of physical geography and cognitive factors. Good gods were more likely the focus of religious practices than evil gods, and where the gods are thought to dwell mattered. If either the being was thought to dwell in a dangerous place or a resource rich place, it was more likely to have practices directed at it.

Keywords
cognition, geography, gods, location, ritual


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Considerable work suggests that while not unidirectional, humans’ interactions with their natural and social environments predict the kinds of beliefs and rituals people have. If this is the case, we predict that components of religious beliefs and cognition will vary as a function of these complex interactions (Purzycki & McNamara, 2016, pp. 153-154).

I (first author) was once touring a palace in England with my family when we struck up a conversation with a caretaker who was sitting quietly in one of the grand halls. Before long, he shared with us his sighting of a particular spirit that lived in the palace and was known to other members of the household staff. Though fascinated by his tale, we were not surprised to hear it. We would have been much more surprised to hear that the staff at IKEA were frequently encountering someone who had been long dead, somewhere next to the frozen meatballs. It seems that ancestors, demons, ghosts, spirits, gods, and other superhuman beings (SBs), are not arbitrarily or uniformly distributed around the world. A quick perusal of the numerous online websites that record and map ghost and spirit sightings, shows that some classes of locations seem to be more suitable homes for the supernatural than others. Graveyards, ancient structures, old churches, battlefields, hospitals, asylums, and other places associated with violent or tragic deaths seem to recur again and again.¹

It is easy to generate possible reasons why the distribution of SBs would be non-random. If SBs are said to dwell in mysterious places shrouded in darkness or otherwise perceptually difficult to access (caverns, mountaintops, and deepest parts of jungles) then it would be difficult to convincingly falsify such claims, particularly in comparison with well-lit and easily accessible grassy fields or supermarkets. If any human institutions are vested in keeping beliefs in SBs active, those SBs that purportedly dwell or act in such hard-to-inspect locations are good choices. Alternatively, any SBs that do not want to be trespassed upon by humans are likely to pick such locations as well.

In addition to perceptual features of environments some aspects of physical geography may have better conceptual affordances for the generation, transmission, and stability of SBs over others. For instance, in cognitive science of religion (or CSR) there has been some suggestion that humans readily perceive design and purpose in the natural world (e.g., Kelemen, 2004) and human-like agency (Guthrie, 1993), which could stimulate or stabilize beliefs in SBs. The tendency to think in design terms about the natural world and to “detect” agency in objects or events, however, will likely vary depending upon environment. Cognitive systems always develop and function in interaction with environmental demands. Concerning the human cognitive system that registers the presence of intentional agents (dubbed the hypersensitive agency detection device or HADD, but recently simply ADD) Barrett (2004) has speculated:

…the immediate context also helps determine HADD’s sensitivity and likelihood to detect agency. I refer primarily to the urgency of the situation for survival, or, at least, for the success or failure of activities that might suggest survival to our
prehistorically created minds. Situations in which we are desperately searching for possible prey, in which we suspect we might be prey for someone or something else, or in which we are desperately in need of finding other people ratchet up the importance of HADD detecting agency given very little information. Missing agency in such urgent situations could prove disastrous—much more disastrous than when we are secure and well fed. (p. 39)

Agency detection and anthropomorphism of features and events in the environment may both help generate thoughts about SBs and help them spread and stabilize in some places better than others.

In a similar vein, Bronislaw Malinowski noticed that Trobriand fishermen performed little ritual when in control of fishing within the lagoon, but once outside on the open sea, ritual (he called it “magic”) was plentiful. Risk and uncertainty, then, created an assumption of need for agency and ritual followed (Malinowski, 1954, p. 30-31, see also Sosis and Handwerker, 2011). Is it true that we find SBs, who are regarded as having a particular dwelling or primary location of activity, localized in places of heightened danger or otherwise important because of their natural resources?²

Beyond general distributions of SBs, Purzycki (2013) has suggested that physical geography may predict specific types of SBs. He writes:

² Evidence associating individual sensitivity in detection of agency with belief in gods or the supernatural has been mixed, but Barrett’s agency detection device was not offered as an account for individual variability in degree of confidence in the existence of any given superhuman being (Barrett, 2017).
Is it the case that in specific places of heightened uncertainty, supernatural agents are more likely to be anthropomorphic? This appears to be the case in Tyva, but other traditions should be assessed to see whether or not this is the case (Purzycki, 2013, p. 112).

Purzycki also presents evidence that in Tyva of southern Siberia, the boundaries of human territories that are remote or otherwise hard to monitor are more likely associated with human-like as opposed to animal-like spirits. Arguably human-like spirits are more conceptually suitable regulators of human affairs than are animal-like spirits, which he found to be more associated with natural resources such as trees, springs, and lakes. Similarly, morally-interested “high gods” have been linked with environments prone to ecological hardship (Botero, et al., 2014). Perhaps believing in superhuman beings that increase cooperation via just reward and punishment is especially adaptive under conditions of duress. We may expect, then, to find that features of SBs, from their human-likeness to their moral character, to be related to features of the environment where they are thought to dwell or act.

It is not unreasonable to think, therefore, that cultural evolution resulting in beliefs in SBs will be the product of (at least) an interaction between local physical geography and human cognitive systems. The present study represents a reexamination of these observations using a recently procured dataset that includes 108 descriptions of SBs provided by local informants, from 20 countries on five continents, with most from Asia (50) and Africa (44), and a particularly strong representation of Indonesian (28) SBs. We specifically consider these research questions:
1. Are SBs that are regarded as having a particular location (either where they dwell or act) more associated with locations of heightened natural resources or danger?

2. Does the moral goodness/evilness, human-likeness, or other features of the SBs predict whether they are regarded as having a particular location?

3. Do features of the physical environment where SBs dwell or especially act (such as danger or natural resources) predict whether SBs are the target of religious or ritual practices?

4. Does the goodness/evilness, human-likeness, or other features of the SBs predict whether the SBs are the target of religious or ritual practices?

Method

The present study is the first statistical analysis from a new dataset gathered from informants from April 2016 to April 2017. Initially, the project team contacted alumni of Fuller Graduate School of Intercultural Studies to serve as informants. These alumni, most of whom received at least some post-graduate training in anthropology, intercultural communication, and comparative theology, live in over 100 nations, often with decades of experience living and working in their current cultural context. Additionally, the

3 The anonymized database will be publically available at http://fuller.edu/science-theology-and-religion/ on or before January 31, 2019. Before that date, the data for this particular study are available upon request.

4 As such informants have considerable experience considering how religious beliefs of different peoples compare to Christian beliefs, it is possible that they would over recruit SBs that differ from Christianity, but the converse is possible as well.
second author contacted scholarly colleagues who live in Asia, Oceania, or Africa to serve as informants or find informants (e.g., among their students). Data were collected via a structured interview using an online Qualtrics survey. Informants were invited to consult with other people in the local context if that would help them produce confident answers. Of this first wave of informants, the average years living in the cultural context for which they provided data was 30.5 (median = 30 years), and ranged from 2 to 50 years. Of these 41 informants, 68.3% regarded themselves as fluent and 17.1% were claimed to be “nearly fluent” in the predominant local language. The rest were either conversational or functional. Thirteen (31.7%) of the informants were women, and a plurality (57.5%) were 31-50 years old with 25% over 50-years-old. These informants provided answers for 1.56 SBs on average, with 61% describing only one SB. A second wave of data collection consisted of face-to-face recruiting and direct structured interviewing by the project team, of over 100 people. The project team used translators when necessary to conduct interviews. These interviews were conducted in Indonesia, Nepal, Papua New Guinea, Thailand, and the United States.

5 We are using the term “informant” in a slightly different way than anthropologists typically use the term, as each informant potentially represented the responses of several other people as well. It was only when the project team began directly interviewing people in group settings that we gathered information directly from “informants” in the more typical sense.

6 Because SBs were the unit of analysis here, if multiple informants described the same SB (e.g., same name, same tradition, similar features), these descriptions were collapsed
Informants were asked to answer questions about a SB familiar to them. SBs were further specified as forces that have the will and ability to act in this world that are generally talked about as having their own thoughts and have properties that set them apart from the natural/material world. Informants were told that: “These include gods, spirits, demons, ancestors, and totemic beings (among others), which may be considered positive, negative, or neutral. They need not be exceptionally powerful or the focus of devotion, although they may be.” We stressed that informants should respond according to how they perceived ordinary laypeople thought about the SBs in question, not necessarily how religious authorities or specialists thought. Informants then answered approximately 100 questions for each SB (sometimes less because previous answers could render subsequent ones non-applicable). The specific questions were inspired or adapted from Barrett (1998), Purzycki (2013), and, primarily, the Database of Religious History (http://religiondatabase.org/landing/). Because the number of questions is so large, we are not attempting a complete analysis of the entire dataset in this report.  

into a single set of scores. Nevertheless, we erred on the side of inclusion, particularly if the nation or language group differed between the two SBs in question. Only six clearly redundant SB descriptions were identified and eliminated.

7 Indeed, the number of questions was so large that many informants only gave incomplete answers, or answered only the earlier questions. Fortunately, the items under consideration here were early in the set. Nevertheless, missing or incomplete data points were common, particularly for items 5.1, and 6.2. See Barrett, et al., this issue, for additional analyses from this data set.
Rather, we are focusing only on responses to 14 questions (see Table, including sub- and follow-up questions, and number and rate of responses).

Features of the dataset should prompt caution in interpreting the following analyses. Specifically, because informants were asked to generate descriptions of SBs, any number of selection biases could be at play. It may be that informants were more likely to describe SBs that were more relevant to their daily activities, resulting in a high proportion of SBs with observances or practices associated with them. Likewise, SBs that are dangerous or taboo to discuss would likely be under-represented. Some informants may have been more effective at eliciting some types of SBs over others. Therefore, any conclusions drawn from the following analyses should be regarded as tentative, particularly null results. Genuine patterns in cultural expression may be obscured by various response biases and other measurement problems. Nevertheless, if the characteristic ways that human minds process information imposes selection pressure on cultural expression the way that CSR scholars and cognitive anthropologists suggest (e.g., Atran, 2002; Barrett 2011; Boyer 2001; McCauley 2011; Sperber, 1996), examination of cross-cultural datasets like this one may aid in detecting broad patterns.  

Results

Locations of SBs

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8 Because our concern is for broad, cross-cultural patterns, for results to merit inclusion in this report they could not be contradicted by regional patterns when considering only Africa, Asia (without Indonesia), and Indonesia, the three regional groups for which we often had sufficient data to re-examine general trends.
The majority of SBs described by informants (66.7%) were regarded as “dwelling in a particular location (e.g., just part of a forest, only in one village, only in one region, etc.).” Similarly, 67.1% of SBs had activity “most commonly reported as occurring in a particular vicinity.” Indeed, 68.8% of the time the dwelling and activity locations were regarded by informants as the same place.

Omnibus 2 x 4 chi-square analyses did not detect significant relationships between what type of SB they were (supreme high god, previously human spirit, non-human spirit, all others) and whether SBs had a specific dwelling or acting place. Nevertheless, a more specific 2 x 2 test suggested that supreme high gods were less likely to dwell in a particular place, \( \chi^2(1) = 4.13, p = .042, \phi = .2, OR = 2.5 \). Supreme high gods were also less likely to act primarily in a specifiable location, \( \chi^2(1) = 6.41, p = .011, \phi = .275, OR = 3.38 \).

When considering whether these dwelling or activity places were more dangerous than normal even if the SB had not been dwelling/acting there, ratings on a five-point scale (scored 0 – 4) did not significantly deviate from the mid-point (neither more nor less dangerous than normal, see Table). Though the full range of scores were used, the most typical response was the mid-point. Likewise, when considering whether the dwelling place of the SBs are “regarded as rich in valuable resources…for humans,” on average informants rated these places as “neither more nor less rich,” \( M = 2.16, SD = 1.29 \). At least on these dimensions of resource richness and concomitant danger for humans, the dwelling locations of activity associated with SBs was most frequently regarded as ordinary. Locations were infrequently described by informants beyond vague
generalities (questions 5.1 and 6.2) but included forests, villages, mountains, caves, in large stones, in trees, on high mountains, bridges, rivers, temples, graves, and even public restrooms.

**Characteristics of SBs**

The vast majority of the 108 SBs were described as “Like a human with some special properties” (72.0%), with “Like a force with some special properties” (21.5%) making up most of the rest. As shown in the table, non-human spirits were the most common class of SBs reported (30.8%). The SBs provided by informants tended to be more evil than good. On a scale of 0-100, the most typical response was entirely evil, 0 (29 of 98 responses, 29.6%), and the mean response was 43.42 ($SD = 38.68$). Though the second most common “goodness” rating was a perfectly good, 100 (15.3%), a fairly uniform range of scores between 0 and 100 was used.

Those 77 SBs labeled as “Like a human with special properties” did not meaningfully differ from the overall sample of SBs concerning locations. A majority was regarded as having a dwelling place (64.5%), and these dwelling places were neither significantly more nor less dangerous ($M = 2.03$, $SD = 1.33$, $CI [1.58, 2.48]$) or resource rich ($M = 2.24$, $SD = 1.21$, $CI [1.83, 2.65]$) than a typical place. Likewise, if the human-

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9 The online Qualtrics survey used a sliding scale for this measure and so all points between 0 and 100 could be used. The slider defaulted to 50.

10 The goodness/evilness of SBs described was one of the few variables with clear regional differences with Indonesia providing a disproportionate number of perfectly evil SBs (see Barrett, et al, this issue).
like SB was regarded as having a primary location where its activity is detected (70.2% of SBs), that location was rated most frequently and on average as neither more nor less dangerous, $M = 1.85, SD = 1.31$. The 23 SBs characterized as “Like a force with some special properties,” also did not significantly differ from the midpoint of the scales concerning the danger or richness of any dwelling place or the danger of the location of primary activity. One-way ANOVAs detected no relationship between SB type (supreme high god, formerly human spirit, etc.) and the degree of danger or richness associated with where the SB dwells or acts.

The goodness/evilness of an SB was associated with whether the SB was regarded as dwelling or acting in a particular location. Those 67 with a particular dwelling place had marginally lower goodness scores ($M = 37.66, SD = 35.09, CI [29.26, 46.06]$), than those without a local dwelling place, $M = 54.03, SD = 44.66, CI [38.31, 69.75]$, $t(96) = 1.97, p = .052, r = .2$. Two-thirds (20 of 30) of the perfectly evil SBs (scores of 0 on goodness), were regarded as having a local dwelling, whereas only 26.67% of the perfectly good SBs (scores of 100) had such a dwelling, $\chi^2(1) = 6.43, p = .011, \phi = .38, OR = 5.5$. Similar patterns obtained concerning whether SBs were regarded as primarily acting in a particular location. Those 51 SBs that do act in a particular location averaged 46.22 for goodness ($SD = 33.97, CI [36.9, 55.54]$) compared to a mean of 66.61 ($SD = 38.63, CI [50.83, 82.40]$) for those 23 that were not primarily active in a single location, $t(72) = 2.29, p = .025, r = .26$. Furthermore, 72.7% of the perfectly evil SBs were perceived as acting primarily in a single place as compared with only 30.8% of the perfectly good SBs, $\chi^2(1) = 4.20, p = .04, \phi = .42, OR = 6$. In this sample, then, the more
evil SBs were the more likely they were to have a particular localized dwelling place or place where they are primarily perceived as acting.

These patterns concerning goodness and locations likewise held when only examining human-like SBs. Those 46 human-like SBs with a dwelling place had a mean goodness score of only 32.30 ($SD = 32.66$, $CI [22.86, 41.74]$), compared with 55.04 ($SD = 43.63$, $CI [37.94, 72.14]$) for the 25 human-like SBs without a dwelling place, $t(69) = 2.48, p = .015, r = .29$. Likewise, perfectly bad human-like SBs were attributed a dwelling place 69.2% of the time, compared to only 10% of the perfectly good ones, $X^2(1) = 10.17, p = .001, \varphi = .53, OR = 20.25$. Perfectly evil human-like SBs were said to have a primary location of activity for 70% of the responses compared with only 22.2% for perfectly good ones, $p = .07$, Fisher’s exact test, $OR = 8.17$.

**Actions directed at SBs**

Were ritual or other religious actions directed at SBs depending upon the characteristics or locations of the SBs? The rated goodness of SBs was a strong predictor of whether they were the “focus of any religious or ritual practices.” Those 57 SBs that were the focus of practices had significantly greater goodness scores ($M = 55.07$, $SD = 36.65$, $CI [45.56, 64.58]$) than those that were not the focus of practices, $M = 33.35$, $SD = 37.42$, $t(81) = 2.49, p = .015, r = .27$. We found a similar pattern when considering only the 37 human-like SBs: those targeted by practices averaged 56.57 ($SD = 34.79$, $CI [45.36, 67.78]$) on goodness, and those 22 not targeted averaged 27.31 ($SD = 37.26$, $CI [16.17, 48.37]$), $t(57) = 2.49, p = .016, r = .31$. Perfectly good human-like SBs were
regularly the focus of religious or ritual practices (80.0%), whereas only 26.7% of perfectly evil SBs were the focus of practices, $p = .015$, Fisher’s exact test, $OR = 11$.

Whether SBs of any sort dwell or act in a particular location was not significantly related to whether those SBs were the focus of practices. Some small relationships between the features of those locations (i.e., danger and resource richness where SBs dwell) and whether SBs were the focus of practices were detected, however. The danger or resource richness of a SB’s dwelling place, or the danger of the place of primary activity was not significantly related to whether the SB was the focus of practices. Nevertheless, the combination of these features in dwelling places seemed to bear some relationship to whether or not a SB is the focus of religious practice. SBs that had a dwelling place greater than ordinary in either danger or resource richness (scores of 3 or 4 on the scales), were the subject of rituals 90.9% of the time. Those SBs that dwelled in an ordinary place or a safer or more resource impoverished place than a typical location were the focus of practices 64% of the time, $X^2(1) = 4.73, p = .03, \phi = .32, OR = 5.62$. Interestingly, this finding appears to be driven by the “bad” SBs, those with scores of 50 or less on the goodness scale. All 16 of the bad SBs who had a dwelling place greater than ordinary in danger or richness were the target of religious or ritual practices, whereas bad SBs located in secure or resource-weak dwelling places were only the focus of practices 67% of the time, $p = .024$, Fisher’s exact test. In contrast, among good SBs, whether their dwelling was elevated in terms of resources or danger had no significant bearing on whether rituals are directed at them, 66.7% versus 61.5% in non-elevated locations.
This relationship between the extraordinariness of the SBs dwelling place was also evident among the human-like SBs. For human-like SBs regarded as having a dwelling place either elevated in resource richness or danger, 93.7% were the focus of religious or ritual practices in this sample. If the dwelling was not above normal in these regards, being the focus of practices dropped to 56.2%, \( p = .037 \), Fisher’s exact test, \( OR = 11.67 \).

**Discussion**

The first two of our research questions concerned whether certain features of superhuman or supernatural beings are related to the locations where they purportedly dwell or act (questions 1 and 2, above). The second two address whether these features of the SBs are related to whether they are the focus of religious or ritual actions (questions 3 and 4).

**Locations**

The first research question motivating this analysis was inspired by Barrett’s speculations concerning how the agency detection device (ADD) in humans might be more sensitive under conditions of heightened danger or when more valuable resources are at risk. The alleged result could be that SB locations may tend to be localized in places with either heightened danger or more natural resources important to humans. Thus, we asked, are SBs that are regarded as having a particular location (either where they dwell or act) more associated with locations of heightened natural resources or danger? At least in this database, we did not find sufficient evidence to answer affirmatively. SBs that have a primary dwelling place or place of activity were not more
likely to be regarded as dwelling or acting in locations with greater than normal danger or
richness of resources.

This null result has many possible explanations. Of course, it could be that agency
detection simply varies little with context. Alternatively, the SBs who are regarded as
dwelling or acting in particularly dangerous places may have been under-represented
because informants did not want to talk about them, regarded describing them as taboo
(as the fourth author found while conducting interviews in Nepal), or did not think to list
them because those locations are typically avoided. Perhaps the request to rate how
dangerous or resource rich a location was “even if” the SB “did not dwell there” was too
complex a counterfactual to elicit reliable data. Note, too, that the survey did not ask
informants about the time of day or conditions under which SB actions were detected. It
could be that places of dwelling or acting are relatively ordinary most of the time, but it is
under special conditions of heightened danger or perceptual ambiguity that SBs’ action is
detected. For instance, the third author found via interviews that many of the spirits in
Halmahera, Indonesia tended to be associated with nighttime, or with hot times of the
day.

Even if the SBs in this dataset are representative and the ratings are relatively
accurate, it is possible that other factors contributing to cultural transmission presently
overwhelm any contribution of heightened agency detection. For instance, Lanna
villagers near Chiang Mai in the far north of Thailand reported to the second author that
in many cases the spirits residing in a tree could not escape before a tree was milled into
planks that were used to build a house. The spirits are stuck in the house and the only
way to release them is to call a monk who can perform a ritual using the Bali language in
order to let them go. Villagers were concerned about the creepy sounds as well as the
“scary visitations” at night. It does not follow that all or even most people experienced
detection of these spirits, and it is not the case that homes were considered unusually
dangerous or resource-rich. They are the epitome of mundane. Thus, it is not the location
of the timber that makes detection of the SBs’ activity more or less likely but how one
interacts with the timber (or trees) because of existing expectations (see also Sørensen,
2007). In situations like this, any clear correspondence between heightened danger of a
location and attributed dwelling or action of an SB would be lost.

Though we did not replicate and extend Purzycki’s finding that Tyvan spirits of a
more human-like sort were associated with different locations than those that were more
animal-like (2013), we did find evidence in support of his general supposition that
features of SBs and of associated local geography do interact. The database contained too
few cases SBs labeled by informants as “like animals” to statistically contrast them with
those labeled “like humans.” Furthermore, those “like humans” were associated with a
range of dwelling places that overlapped with both human-like spirits and animal-like
spirits of Tyva: rocks, rivers, trees, and bridges. No differences were found among
classes of SBs (e.g., human-like versus force-like) on rates of having a local dwelling,
having localized action, resource-richness, or danger. However, with so few non-human-
like SBs, differences would have to be large to be detected.

Religious and Ritual Practices
Interestingly, particularly among morally bad or evil SBs, features of the physical environment where an SB dwells had a relationship with whether the SB was the focus of religious or ritual practices. If an SB is regarded as dwelling in a place that is either above normal in its richness in natural resources or is more dangerous than normal, then the SB is more likely to be the focus of religious or ritual practices. Put another way, SBs in this sample were often the focus of practices (approximately 65% of the time), when SBs dwell in a place elevated in richness or danger, they were the focus of practices over 90% of the time. Our third research question was, “Do features of the physical environment (such as danger or natural resources) predict whether SBs are the target of religious or ritual practices?” The answer appears to be yes, but why? It could be that instead of the ADD leading to more postulation of SBs in places of danger or resource richness, it triggers more motivation to act if there is already some notion that a morally dubious super-agent could be around. After all, if this agency detection system was an adaptation that led to fitness-enhancing behavior (arguably with pre-hominid roots) it may be more action than conception-oriented. That, in turn would lead to further modification of behavioral strategies than to reflective speculation. Of course, a similar pattern could be explained without reference to any kind of agency detection system. Just thinking strategically to reduce risk and maximize reward, if one suspects a morally-dubious super-being lives where there is either elevated danger or resource richness, one may be motivated to try to propitiate the SB to reduce the danger or access the resources.11

11 Our data do not directly support or overturn Malinowski’s contention that lack of control and elevated risk in human activities prompts ritual observances. The present
discussed below, however, merely being a morally suspect SB does not appear to lead to ritual or religious practices.

Does the goodness, human-likeness, or other features of SBs predict whether they are the targets of religious or ritual practices? Human-like SBs were less likely to be the focus of religious or ritual practices (59.7%) than force-like SBs (82.6%), but this difference could be the result of perceptions of goodness for these two SB classes. Human-like SBs were scored as less good than force-like SBs. In the entire dataset and only considering SBs best described as “like a human with special properties,” goodness was associated with being the focus of religious or ritual practice. Those without rituals averaged solidly on the “evil” side of the goodness scale ($M = 28.9$) and 86% of the perfectly good SBs were the target of religious or ritual practices.\(^{12}\)

**Conclusion**

Though limitations of the dataset should make us cautious in drawing strong interpretations, particular features of superhuman beings—ancestors, demons, spirits, and gods—and whether they are the subject of religious and ritual practices appear to co-vary

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\(^{12}\) These results ran counter to our assumptions and possibly those of many others. In a quick web-search, we looked for the combination “good gods” + ritual, and “bad gods” + ritual. The results were overwhelming—9800 for the former and over 53,000 for the later.
in relation to both features of physical geography and cognitive factors. It may be
tempting to think that cultural particulars are the only factors that matter when it comes to
whether rituals are performed for gods or whether they are regarded as good or bad,
dwelling locally or not, and so on. The data presented here suggest otherwise. Good gods
are more likely the focus of religious practices than evil gods, and where the gods are
thought to dwell matters. If either the being is thought to dwell in a dangerous place or it
dwells in a resource rich place, it is more likely to have practices directed at it. Perhaps,
then, certain features of physical geography interact with evolved human cognition in
pressuring cultural evolution. Gods that are associated with resource-rich or dangerous
places may seem intuitively to require some kind of response from humans, particularly if
the benevolence of these superhumans cannot be taken for granted. They may also be
places that encourage regulation and gods can help. Otherwise, it may be the good gods
that more readily generate feelings of devotion and worship, leading to various religious
practices directed at them through cognitive-environment interactions. Such patterns, if
they hold, suggest something analogous to a tacit, generative grammar-like conceptual
structure that loosely informs how superhuman being concepts form and persist in
cultural groups, an idea very much at home in the cognitive science of religion (Boyer,
2001; McCauley & Lawson, 2002). Though other factors of cultural transmission,
including the power of trusted testimony and conformity, undoubtedly play roles, perhaps
they are nudged by individual intuitions.
References


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http://religionondatabase.org/landing/


<table>
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<tr>
<th>Items for Analysis</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>1. What is the location of the people group whose SB(s) you will describe?</td>
<td>108 (100%)</td>
</tr>
<tr>
<td>2. Please provide the name of a SB that you will focus on throughout this survey.</td>
<td>108 (100%)</td>
</tr>
<tr>
<td>3. Is [SB] best characterized as “Like a human with some special properties,” “Like a force …,” “Like an animal …,” or “Like a natural object with some special properties”?</td>
<td>107 (99.1%)</td>
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<tr>
<td></td>
<td>Like a human: 72.0%</td>
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<td></td>
<td>Force: 21.5%</td>
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<td></td>
<td>Animal: 3.7%</td>
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<td></td>
<td>Natural object: 2.8%</td>
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<td>4. Please rate how good or evil this SB is considered to be (use the slider to identify: far left [0] is unquestionably evil, far right [100] is unquestionably good and midpoint is neutral).</td>
<td>98 (90.7%)</td>
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<td></td>
<td>M = 43.42, SD = 38.68</td>
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<td></td>
<td>CI [35.76, 51.08]</td>
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<td>Mode = 0; 29.6%</td>
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<td>5. Is [SB] regarded as dwelling in a particular location? (e.g. just part of a forest, only in one village, only in one region, etc.)?</td>
<td>105 (97.2%)</td>
</tr>
<tr>
<td>5.1. Please describe where and include global coordinates if possible. [Instructions for finding these coordinates on Google Maps or a smartphone were provided.]</td>
<td>52 (74.3%)</td>
</tr>
<tr>
<td></td>
<td>M = 1.85, SD = 1.45</td>
</tr>
<tr>
<td></td>
<td>CI [1.46, 2.24]</td>
</tr>
<tr>
<td>5.2. Would this location be regarded as more or less dangerous for humans than average in this area even if [SB] did not dwell there? [Rated: Far less dangerous, Slightly less dangerous, Neither more nor less dangerous, Slightly more dangerous, or Far more dangerous.] (Scored 0 – 4)</td>
<td>51 (72.9%)</td>
</tr>
<tr>
<td></td>
<td>M = 2.16, SD = 1.29</td>
</tr>
<tr>
<td></td>
<td>CI [1.81, 2.51]</td>
</tr>
<tr>
<td>5.3. Would this location be regarded as rich in valuable resources (e.g. game, herbs, building supplies, fuel, precious metals/gems) for humans? [Rated: Far less rich than typical, Slightly less rich..., Neither more nor less rich ..., Slightly more rich ..., or Far more rich than typical.] (Scored 0 – 4)</td>
<td>85 (78.7%)</td>
</tr>
<tr>
<td></td>
<td>N = 51 (72.9%)</td>
</tr>
<tr>
<td></td>
<td>M = 2.16, SD = 1.29</td>
</tr>
<tr>
<td></td>
<td>CI [1.81, 2.51]</td>
</tr>
<tr>
<td>6. Is the activity of [SB] most commonly reported as occurring in a particular vicinity?</td>
<td>85 (78.7%)</td>
</tr>
<tr>
<td>6.1. Please describe where and include global coordinates if possible.</td>
<td>67.1%</td>
</tr>
</tbody>
</table>
| 6.2. Is the *activity* the same as where [SB] is regarded as dwelling (as reported above)? | $N = 77$ (90.6%)  
Yes = 68.8% |
| 6.3. Would this location be regarded as more or less dangerous for humans than is typical in this area even if [SB] did not act here? (see 5.1 for scoring) | $N = 59$ (100%)  
$M = 1.88$, $SD = 1.42$  
$CI [1.52, 2.24]$ |
| 7. Is [SB] the focus of any religious or ritual practices? | $N = 91$ (84.3%)  
Yes = 68.1% |
| 8. Is [SB] a Supreme high god, 
Formerly human spirit, 
Non-human spirit 
Other? (Asked as a series of yes-no questions.) | $N = 26$ (22.2%)  
$N = 27$ (23.1%)  
$N = 36$ (30.8%)  
$N = 19$ (16.2%) |
Where the Gods Dwell: A Research Report

Considerable work suggests that while not unidirectional, humans’ interactions with their natural and social environments predict the kinds of beliefs and rituals people have. If this is the case, we predict that components of religious beliefs and cognition will vary as a function of these complex interactions (Purzycki & McNamara, 2016, pp. 153-154).

I (first author) was once touring a palace in England with my family when we struck up a conversation with a caretaker who was sitting quietly in one of the grand halls. Before long, he shared with us his sighting of a particular spirit that lived in the palace and was known to other members of the household staff. Though fascinated by his tale, we were not surprised to hear it. We would have been much more surprised to hear that the staff at IKEA were frequently encountering someone who had been long dead, somewhere next to the frozen meatballs. It seems that ancestors, demons, ghosts, spirits, gods, and other superhuman beings (SBs), are not arbitrarily or uniformly distributed around the world. A quick perusal of the numerous online websites that record and map ghost and spirit sightings, shows that some classes of locations seem to be more suitable homes for the supernatural than others. Graveyards, ancient structures, old churches, battlefields, hospitals, asylums, and other places associated with violent or tragic deaths seem to recur again and again.¹

It is easy to generate possible reasons why the distribution of SBs would be non-random. If SBs are said to dwell in mysterious places shrouded in darkness or otherwise perceptually difficult to access (caverns, mountaintops, and deepest parts of jungles) then it would be difficult to convincingly falsify such claims, particularly in comparison with well-lit and easily accessible grassy fields or supermarkets. If any human institutions are vested in keeping beliefs in SBs active, those SBs that purportedly dwell or act in such hard-to-inspect locations are good choices. Alternatively, any SBs that do not want to be trespassed upon by humans are likely to pick such locations as well.

In addition to perceptual features of environments some aspects of physical geography may have better conceptual affordances for the generation, transmission, and stability of SBs over others. For instance, in cognitive science of religion (or CSR) there has been some suggestion that humans readily perceive design and purpose in the natural world (e.g., Kelemen, 2004) and human-like agency (Guthrie, 1993), which could stimulate or stabilize beliefs in SBs. The tendency to think in design terms about the natural world and to “detect” agency in objects or events, however, will likely vary depending upon environment. Cognitive systems always develop and function in interaction with environmental demands. Concerning the human cognitive system that registers the presence of intentional agents (dubbed the hypersensitive agency detection device or HADD, but recently simply ADD) Barrett (2004) has speculated:

…the immediate context also helps determine HADD’s sensitivity and likelihood to detect agency. I refer primarily to the urgency of the situation for survival, or, at least, for the success or failure of activities that might suggest survival to our
prehistorically created minds. Situations in which we are desperately searching for possible prey, in which we suspect we might be prey for someone or something else, or in which we are desperately in need of finding other people ratchet up the importance of HADD detecting agency given very little information. Missing agency in such urgent situations could prove disastrous—much more disastrous than when we are secure and well fed. (p. 39)

Agency detection and anthropomorphism of features and events in the environment may both help generate thoughts about SBs and help them spread and stabilize in some places better than others.

In a similar vein, Bronislaw Malinowski noticed that Trobriand fishermen performed little ritual when in control of fishing within the lagoon, but once outside on the open sea, ritual (he called it “magic”) was plentiful. Risk and uncertainty, then, created an assumption of need for agency and ritual followed (Malinowski, 1954, p. 30-31, see also Sosis and Handwerker, 2011). Is it true that we find SBs, who are regarded as having a particular dwelling or primary location of activity, localized in places of heightened danger or otherwise important because of their natural resources?²

Beyond general distributions of SBs, Purzycki (2013) has suggested that physical geography may predict specific types of SBs. He writes:

² Evidence associating individual sensitivity in detection of agency with belief in gods or the supernatural has been mixed, but Barrett’s agency detection device was not offered as an account for individual variability in degree of confidence in the existence of any given superhuman being (Barrett, 2017).
Is it the case that in specific places of heightened uncertainty, supernatural agents are more likely to be anthropomorphic? This appears to be the case in Tyva, but other traditions should be assessed to see whether or not this is the case (Purzycki, 2013, p. 112).

Purzycki also presents evidence that in Tyva of southern Siberia, the boundaries of human territories that are remote or otherwise hard to monitor are more likely associated with human-like as opposed to animal-like spirits. Arguably human-like spirits are more conceptually suitable regulators of human affairs than are animal-like spirits, which he found to be more associated with natural resources such as trees, springs, and lakes.

Similarly, morally-interested “high gods” have been linked with environments prone to ecological hardship (Botero, et al., 2014). Perhaps believing in superhuman beings that increase cooperation via just reward and punishment is especially adaptive under conditions of duress. We may expect, then, to find that features of SBs, from their human-likeness to their moral character, to be related to features of the environment where they are thought to dwell or act.

It is not unreasonable to think, therefore, that cultural evolution resulting in beliefs in SBs will be the product of (at least) an interaction between local physical geography and human cognitive systems. The present study represents a reexamination of these observations using a recently procured dataset that includes 108 descriptions of SBs provided by local informants, from 20 countries on five continents, with most from Asia (50) and Africa (44), and a particularly strong representation of Indonesian (28) SBs. We specifically consider these research questions:
1. Are SBs that are regarded as having a particular location (either where they dwell or act) more associated with locations of heightened natural resources or danger?

2. Does the moral goodness/evilness, human-likeness, or other features of the SBs predict whether they are regarded as having a particular location?

3. Do features of the physical environment where SBs dwell or especially act (such as danger or natural resources) predict whether SBs are the target of religious or ritual practices?

4. Does the goodness/evilness, human-likeness, or other features of the SBs predict whether the SBs are the target of religious or ritual practices?

Method

The present study is the first statistical analysis from a new dataset gathered from informants from April 2016 to April 2017. Initially, the project team contacted alumni of Fuller Graduate School of Intercultural Studies to serve as informants. These alumni, most of whom received at least some post-graduate training in anthropology, intercultural communication, and comparative theology, live in over 100 nations, often with decades of experience living and working in their current cultural context. Additionally, the

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3 The anonymized database will be publically available at [http://fuller.edu/science-theology-and-religion/](http://fuller.edu/science-theology-and-religion/) on or before January 31, 2019. Before that date, the data for this particular study are available upon request.

4 As such informants have considerable experience considering how religious beliefs of different peoples compare to Christian beliefs, it is possible that they would over recruit SBs that differ from Christianity, but the converse is possible as well.
second author contacted scholarly colleagues who live in Asia, Oceania, or Africa to serve as informants or find informants (e.g., among their students). Data were collected via a structured interview using an online Qualtrics survey. Informants were invited to consult with other people in the local context if that would help them produce confident answers. Of this first wave of informants, the average years living in the cultural context for which they provided data was 30.5 (median = 30 years), and ranged from 2 to 50 years. Of these 41 informants, 68.3% regarded themselves as fluent and 17.1% were claimed to be “nearly fluent” in the predominant local language. The rest were either conversational or functional. Thirteen (31.7%) of the informants were women, and a plurality (57.5%) were 31-50 years old with 25% over 50-years-old. These informants provided answers for 1.56 SBs on average, with 61% describing only one SB. A second wave of data collection consisted of face-to-face recruiting and direct structured interviewing by the project team, of over 100 people. The project team used translators when necessary to conduct interviews. These interviews were conducted in Indonesia, Nepal, Papua New Guinea, Thailand, and the United States.

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5 We are using the term “informant” in a slightly different way than anthropologists typically use the term, as each informant potentially represented the responses of several other people as well. It was only when the project team began directly interviewing people in group settings that we gathered information directly from “informants” in the more typical sense.

6 Because SBs were the unit of analysis here, if multiple informants described the same SB (e.g., same name, same tradition, similar features), these descriptions were collapsed...
Informants were asked to answer questions about a SB familiar to them. SBs were further specified as forces that have the will and ability to act in this world that are generally talked about as having their own thoughts and have properties that set them apart from the natural/material world. Informants were told that: “These include gods, spirits, demons, ancestors, and totemic beings (among others), which may be considered positive, negative, or neutral. They need not be exceptionally powerful or the focus of devotion, although they may be.” We stressed that informants should respond according to how they perceived ordinary laypeople thought about the SBs in question, not necessarily how religious authorities or specialists thought. Informants then answered approximately 100 questions for each SB (sometimes less because previous answers could render subsequent ones non-applicable). The specific questions were inspired or adapted from Barrett (1998), Purzycki (2013), and, primarily, the Database of Religious History (http://religiondatabase.org/landing/). Because the number of questions is so large, we are not attempting a complete analysis of the entire dataset in this report.

Indeed, the number of questions was so large that many informants only gave incomplete answers, or answered only the earlier questions. Fortunately, the items under consideration here were early in the set. Nevertheless, missing or incomplete data points were common, particularly for items 5.1, and 6.2. See Barrett, et al., this issue, for additional analyses from this data set.
Rather, we are focusing only on responses to 14 questions (see Table, including sub- and follow-up questions, and number and rate of responses).

Features of the dataset should prompt caution in interpreting the following analyses. Specifically, because informants were asked to generate descriptions of SBs, any number of selection biases could be at play. It may be that informants were more likely to describe SBs that were more relevant to their daily activities, resulting in a high proportion of SBs with observances or practices associated with them. Likewise, SBs that are dangerous or taboo to discuss would likely be under-represented. Some informants may have been more effective at eliciting some types of SBs over others. Therefore, any conclusions drawn from the following analyses should be regarded as tentative, particularly null results. Genuine patterns in cultural expression may be obscured by various response biases and other measurement problems. Nevertheless, if the characteristic ways that human minds process information imposes selection pressure on cultural expression the way that CSR scholars and cognitive anthropologists suggest (e.g., Atran, 2002; Barrett 2011; Boyer 2001; McCauley 2011; Sperber, 1996), examination of cross-cultural datasets like this one may aid in detecting broad patterns. 

Results

Locations of SBs

8 Because our concern is for broad, cross-cultural patterns, for results to merit inclusion in this report they could not be contradicted by regional patterns when considering only Africa, Asia (without Indonesia), and Indonesia, the three regional groups for which we often had sufficient data to re-examine general trends.
The majority of SBs described by informants (66.7%) were regarded as “dwelling in a particular location (e.g., just part of a forest, only in one village, only in one region, etc.).” Similarly, 67.1% of SBs had activity “most commonly reported as occurring in a particular vicinity.” Indeed, 68.8% of the time the dwelling and activity locations were regarded by informants as the same place.

Omnibus 2 x 4 chi-square analyses did not detect significant relationships between what type of SB they were (supreme high god, previously human spirit, non-human spirit, all others) and whether SBs had a specific dwelling or acting place. Nevertheless, a more specific 2 x 2 test suggested that supreme high gods were less likely to dwell in a particular place, \( X^2(1) = 4.13, p = .042, \varphi = .2, OR = 2.5 \). Supreme high gods were also less likely to act primarily in a specifiable location, \( X^2(1) = 6.41, p = .011, \varphi = .275, OR = 3.38 \).

When considering whether these dwelling or activity places were more dangerous than normal even if the SB had not been dwelling/acting there, ratings on a five-point scale (scored 0 – 4) did not significantly deviate from the mid-point (neither more nor less dangerous than normal, see Table). Though the full range of scores were used, the most typical response was the mid-point. Likewise, when considering whether the dwelling place of the SBs are “regarded as rich in valuable resources…for humans,” on average informants rated these places as “neither more nor less rich,” \( M = 2.16, SD = 1.29 \). At least on these dimensions of resource richness and concomitant danger for humans, the dwelling locations of activity associated with SBs was most frequently regarded as ordinary. Locations were infrequently described by informants beyond vague
generalities (questions 5.1 and 6.2) but included forests, villages, mountains, caves, in large stones, in trees, on high mountains, bridges, rivers, temples, graves, and even public restrooms.

**Characteristics of SBs**

The vast majority of the 108 SBs were described as “Like a human with some special properties” (72.0%), with “Like a force with some special properties” (21.5%) making up most of the rest. As shown in the table, non-human spirits were the most common class of SBs reported (30.8%). The SBs provided by informants tended to be more evil than good. On a scale of 0-100, the most typical response was entirely evil, 0 (29 of 98 responses, 29.6%), and the mean response was 43.42 ($SD = 38.68$). Though the second most common “goodness” rating was a perfectly good, 100 (15.3%), a fairly uniform range of scores between 0 and 100 was used.

Those 77 SBs labeled as “Like a human with special properties” did not meaningfully differ from the overall sample of SBs concerning locations. A majority was regarded as having a dwelling place (64.5%), and these dwelling places were neither significantly more nor less dangerous ($M = 2.03$, $SD = 1.33$, $CI [1.58, 2.48]$) or resource rich ($M = 2.24$, $SD = 1.21$, $CI [1.83, 2.65]$) than a typical place. Likewise, if the human-

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9 The online Qualtrics survey used a sliding scale for this measure and so all points between 0 and 100 could be used. The slider defaulted to 50.

10 The goodness/evilness of SBs described was one of the few variables with clear regional differences with Indonesia providing a disproportionate number of perfectly evil SBs (see Barrett, et al, this issue).
like SB was regarded as having a primary location where its activity is detected (70.2% of SBs), that location was rated most frequently and on average as neither more nor less dangerous, $M = 1.85$, $SD = 1.31$. The 23 SBs characterized as “Like a force with some special properties,” also did not significantly differ from the midpoint of the scales concerning the danger or richness of any dwelling place or the danger of the location of primary activity. One-way ANOVAs detected no relationship between SB type (supreme high god, formerly human spirit, etc.) and the degree of danger or richness associated with where the SB dwells or acts.

The goodness/evilness of an SB was associated with whether the SB was regarded as dwelling or acting in a particular location. Those 67 with a particular dwelling place had marginally lower goodness scores ($M = 37.66$, $SD = 35.09$, $CI [29.26, 46.06]$), than those without a local dwelling place, $M = 54.03$, $SD = 44.66$, $CI [38.31, 69.75]$, $t(96) = 1.97, p = .052, r = 0.2$. Two-thirds (20 of 30) of the perfectly evil SBs (scores of 0 on goodness), were regarded as having a local dwelling, whereas only 26.67% of the perfectly good SBs (scores of 100) had such a dwelling, $X^2(1) = 6.43, p = .011, \varphi = .38, OR = 5.5$. Similar patterns obtained concerning whether SBs were regarded as primarily acting in a particular location. Those 51 SBs that do act in a particular location averaged 46.22 for goodness ($SD = 33.97$, $CI [36.9, 55.54]$) compared to a mean of 66.61 ($SD = 38.63$, $CI [50.83, 82.40]$) for those 23 that were not primarily active in a single location, $t(72) = 2.29, p = .025, r = .26$. Furthermore, 72.7% of the perfectly evil SBs were perceived as acting primarily in a single place as compared with only 30.8% of the perfectly good SBs, $X^2(1) = 4.20, p = .04, \varphi = .42, OR = 6$. In this sample, then, the more
evil SBs were the more likely they were to have a particular localized dwelling place or place where they are primarily perceived as acting.

These patterns concerning goodness and locations likewise held when only examining human-like SBs. Those 46 human-like SBs with a dwelling place had a mean goodness score of only 32.30 (SD = 32.66, CI [22.86, 41.74]), compared with 55.04 (SD = 43.63, CI [37.94, 72.14]) for the 25 human-like SBs without a dwelling place, \( t(69) = 2.48, p = .015, r = .29 \). Likewise, perfectly bad human-like SBs were attributed a dwelling place 69.2% of the time, compared to only 10% of the perfectly good ones, \( \chi^2(1) = 10.17, p = .001, \phi = .53, OR = 20.25 \). Perfectly evil human-like SBs were said to have a primary location of activity for 70% of the responses compared with only 22.2% for perfectly good ones, \( p = .07 \), Fisher’s exact test, \( OR = 8.17 \).

**Actions directed at SBs**

Were ritual or other religious actions directed at SBs depending upon the characteristics or locations of the SBs? The rated goodness of SBs was a strong predictor of whether they were the “focus of any religious or ritual practices.” Those 57 SBs that were the focus of practices had significantly greater goodness scores (\( M = 55.07, SD = 36.65, CI [45.56, 64.58] \)) than those that were not the focus of practices, \( M = 33.35, SD = 37.42, t(81) = 2.49, p = .015, r = .27 \). We found a similar pattern when considering only the 37 human-like SBs: those targeted by practices averaged 56.57 (SD = 34.79, CI [45.36, 67.78]) on goodness, and those 22 not targeted averaged 27.31 (SD = 37.26, CI [16.17, 48.37]), \( t(57) = 2.49, p = .016, r = .31 \). Perfectly good human-like SBs were
regularly the focus of religious or ritual practices (80.0%), whereas only 26.7% of perfectly evil SBs were the focus of practices, $p = .015$, Fisher’s exact test, $OR = 11$.

Whether SBs of any sort dwell or act in a particular location was not significantly related to whether those SBs were the focus of practices. Some small relationships between the features of those locations (i.e., danger and resource richness where SBs dwell) and whether SBs were the focus of practices were detected, however. The danger or resource richness of a SB’s dwelling place, or the danger of the place of primary activity was not significantly related to whether the SB was the focus of practices. Nevertheless, the combination of these features in dwelling places seemed to bear some relationship to whether or not a SB is the focus of religious practice. SBs that had a dwelling place greater than ordinary in either danger or resource richness (scores of 3 or 4 on the scales), were the subject of rituals 90.9% of the time. Those SBs that dwelled in an ordinary place or a safer or more resource impoverished place than a typical location were the focus of practices 64% of the time, $\chi^2(1) = 4.73, p = .03, \phi = .32, OR = 5.62$. Interestingly, this finding appears to be driven by the “bad” SBs, those with scores of 50 or less on the goodness scale. All 16 of the bad SBs who had a dwelling place greater than ordinary in danger or richness were the target of religious or ritual practices, whereas bad SBs located in secure or resource-weak dwelling places were only the focus of practices 67% of the time, $p = .024$, Fisher’s exact test. In contrast, among good SBs, whether their dwelling was elevated in terms of resources or danger had no significant bearing on whether rituals are directed at them, 66.7% versus 61.5% in non-elevated locations.
This relationship between the extraordinariness of the SBs dwelling place was also evident among the human-like SBs. For human-like SBs regarded as having a dwelling place either elevated in resource richness or danger, 93.7% were the focus of religious or ritual practices in this sample. If the dwelling was not above normal in these regards, being the focus of practices dropped to 56.2%, \( p = .037 \), Fisher’s exact test, \( OR = 11.67 \).

**Discussion**

The first two of our research questions concerned whether certain features of superhuman or supernatural beings are related to the locations where they purportedly dwell or act (questions 1 and 2, above). The second two address whether these features of the SBs are related to whether they are the focus of religious or ritual actions (questions 3 and 4).

**Locations**

The first research question motivating this analysis was inspired by Barrett’s speculations concerning how the agency detection device (ADD) in humans might be more sensitive under conditions of heightened danger or when more valuable resources are at risk. The alleged result could be that SB locations may tend to be localized in places with either heightened danger or more natural resources important to humans. Thus, we asked, are SBs that are regarded as having a particular location (either where they dwell or act) more associated with locations of heightened natural resources or danger? At least in this database, we did not find sufficient evidence to answer affirmatively. SBs that have a primary dwelling place or place of activity were not more
likely to be regarded as dwelling or acting in locations with greater than normal danger or richness of resources.

This null result has many possible explanations. Of course, it could be that agency detection simply varies little with context. Alternatively, the SBs who are regarded as dwelling or acting in particularly dangerous places may have been under-represented because informants did not want to talk about them, regarded describing them as taboo (as the fourth author found while conducting interviews in Nepal), or did not think to list them because those locations are typically avoided. Perhaps the request to rate how dangerous or resource rich a location was “even if” the SB “did not dwell there” was too complex a counterfactual to elicit reliable data. Note, too, that the survey did not ask informants about the time of day or conditions under which SB actions were detected. It could be that places of dwelling or acting are relatively ordinary most of the time, but it is under special conditions of heightened danger or perceptual ambiguity that SBs’ action is detected. For instance, the third author found via interviews that many of the spirits in Halmahera, Indonesia tended to be associated with nighttime, or with hot times of the day.

Even if the SBs in this dataset are representative and the ratings are relatively accurate, it is possible that other factors contributing to cultural transmission presently overwhelm any contribution of heightened agency detection. For instance, Lanna villagers near Chiang Mai in the far north of Thailand reported to the second author that in many cases the spirits residing in a tree could not escape before a tree was milled into planks that were used to build a house. The spirits are stuck in the house and the only
way to release them is to call a monk who can perform a ritual using the Bali language in
order to let them go. Villagers were concerned about the creepy sounds as well as the
“scary visitations” at night. It does not follow that all or even most people experienced
detection of these spirits, and it is not the case that homes were considered unusually
dangerous or resource-rich. They are the epitome of mundane. Thus, it is not the location
of the timber that makes detection of the SBs’ activity more or less likely but how one
interacts with the timber (or trees) because of existing expectations (see also Sørensen,
2007). In situations like this, any clear correspondence between heightened danger of a
location and attributed dwelling or action of an SB would be lost.

Though we did not replicate and extend Purzycki’s finding that Tyvan spirits of a
more human-like sort were associated with different locations than those that were more
animal-like (2013), we did find evidence in support of his general supposition that
features of SBs and of associated local geography do interact. The database contained too
few cases SBs labeled by informants as “like animals” to statistically contrast them with
those labeled “like humans.” Furthermore, those “like humans” were associated with a
range of dwelling places that overlapped with both human-like spirits and animal-like
spirits of Tyva: rocks, rivers, trees, and bridges. No differences were found among
classes of SBs (e.g., human-like versus force-like) on rates of having a local dwelling,
having localized action, resource-richness, or danger. However, with so few non-human-
like SBs, differences would have to be large to be detected.

Religious and Ritual Practices
Interestingly, particularly among morally bad or evil SBs, features of the physical environment where an SB dwells had a relationship with whether the SB was the focus of religious or ritual practices. If an SB is regarded as dwelling in a place that is either above normal in its richness in natural resources or is more dangerous than normal, then the SB is more likely to be the focus of religious or ritual practices. Put another way, SBs in this sample were often the focus of practices (approximately 65% of the time), when SBs dwell in a place elevated in richness or danger, they were the focus of practices over 90% of the time. Our third research question was, “Do features of the physical environment (such as danger or natural resources) predict whether SBs are the target of religious or ritual practices?” The answer appears to be yes, but why? It could be that instead of the ADD leading to more postulation of SBs in places of danger or resource richness, it triggers more motivation to act if there is already some notion that a morally dubious super-agent could be around. After all, if this agency detection system was an adaptation that led to fitness-enhancing behavior (arguably with pre-hominid roots) it may be more action than conception-oriented. That, in turn would lead to further modification of behavioral strategies than to reflective speculation. Of course, a similar pattern could be explained without reference to any kind of agency detection system. Just thinking strategically to reduce risk and maximize reward, if one suspects a morally-dubious super-being lives where there is either elevated danger or resource richness, one may be motivated to try to propitiate the SB to reduce the danger or access the resources.\textsuperscript{11}

\textsuperscript{11} Our data do not directly support or overturn Malinowski’s contention that lack of control and elevated risk in human activities prompts ritual observances. The present
discussed below, however, merely being a morally suspect SB does not appear to lead to
ritual or religious practices.

Does the goodness, human-likeness, or other features of SBs predict whether they
are the targets of religious or ritual practices? Human-like SBs were less likely to be the
focus of religious or ritual practices (59.7%) than force-like SBs (82.6%), but this
difference could be the result of perceptions of goodness for these two SB classes.

Human-like SBs were scored as less good than force-like SBs. In the entire dataset and
only considering SBs best described as “like a human with special properties,” goodness
was associated with being the focus of religious or ritual practice. Those without rituals
averaged solidly on the “evil” side of the goodness scale ($M = 28.9$) and 86% of the
perfectly good SBs were the target of religious or ritual practices.\(^{12}\)

Conclusion

Though limitations of the dataset should make us cautious in drawing strong
interpretations, particular features of superhuman beings—ancestors, demons, spirits, and
gods—and whether they are the subject of religious and ritual practices appear to co-vary

\(^{12}\) These results ran counter to our assumptions and possibly those of many others. In a
quick web-search, we looked for the combination “good gods” + ritual, and “bad gods”
+ ritual. The results were overwhelming—9800 for the former and over 53,000 for the
later.
in relation to both features of physical geography and cognitive factors. It may be tempting to think that cultural particulars are the only factors that matter when it comes to whether rituals are performed for gods or whether they are regarded as good or bad, dwelling locally or not, and so on. The data presented here suggest otherwise. Good gods are more likely the focus of religious practices than evil gods, and where the gods are thought to dwell matters. If either the being is thought to dwell in a dangerous place or it dwells in a resource rich place, it is more likely to have practices directed at it. Perhaps, then, certain features of physical geography interact with evolved human cognition in pressuring cultural evolution. Gods that are associated with resource-rich or dangerous places may seem intuitively to require some kind of response from humans, particularly if the benevolence of these superhumans cannot be taken for granted. They may also be places that encourage regulation and gods can help. Otherwise, it may be the good gods that more readily generate feelings of devotion and worship, leading to various religious practices directed at them through cognitive-environment interactions. Such patterns, if they hold, suggest something analogous to a tacit, generative grammar-like conceptual structure that loosely informs how superhuman being concepts form and persist in cultural groups, an idea very much at home in the cognitive science of religion (Boyer, 2001; McCauley & Lawson, 2002). Though other factors of cultural transmission, including the power of trusted testimony and conformity, undoubtedly play roles, perhaps they are nudged by individual intuitions.
References


