

there was a lack of evidence for the effectiveness of mitigation measures, subsequent research might have been instigated on the basis of established need.

However, although opportunities have been missed, we believe that it is now important to ensure that information is collated so that future conservation can be based on evidence. We accept that this requires a fundamental change in conservation practice so that the monitoring of the effectiveness of conservation actions and providing the information in an accessible manner becomes a standard component of any site manager's job. However, most practitioners that we talk to agree that this change is essential; they would often be prepared to contribute and would welcome having access to information that is available.

Since submitting our article to *TREE* [3], there has been considerable progress made in developing the ideas in practice. In spring 2004, most of the major UK conservation organizations met and agreed to work together on a website collating the evidence on the effectiveness of conservation management and the British Ecological Society provided financing. This website is now in its draft stages and there has been interest from elsewhere in the world in collaborating in this site.

Progress has also been made in the development of systematic reviews. The Centre for Evidence-based Conservation at the University of Birmingham (<http://www.cebc.bham.ac.uk>) has begun to produce systematic reviews in collaboration with an increasing number of UK Governmental and non-governmental conservation organizations. The Centre is encouraging all conservation biologists to consider undertaking systematic reviews in their specialist area to help determine the current state of knowledge. Scientists and conservation organizations across the globe have expressed interest in establishing similar centres and we hope that a network similar to that established in the health sciences will develop.

Health service providers have a range of websites that

contain advice based upon evidence. One example is <http://www.clinicalevidence.com>, which is searchable by ailment type. For each ailment, it classifies treatments as being beneficial; likely to be beneficial; a tradeoff between benefits and harms; unlikely to be beneficial; likely to be ineffective or harmful; and of unknown effectiveness. For each treatment, it gives the evidence for its effectiveness. It has subsections about particular issues, such as whether treatment differs for those who are pregnant. Conservation biology is challenging because it has more problems to be addressed; for example, each invasive species must be considered separately, and less money is available for research. However, an evidence-based advice service for conservationists is essential.

We agree that there will always be situations (as in medicine) in which crisis management will be needed, but this is no reason for failing to evaluate critically the effectiveness of commonly used or novel practices. It might well be that many practices turn out to be worse than doing nothing, and a great deal more expensive.

Although we are a long way from being able to provide the kind of evidence-based service that underpins current medical practice, we believe that there is the goodwill to proceed. If we can make this happen now, future conservationists will be better able to assess the evidence for and against potential conservation options.

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doi:10.1016/j.tree.2004.09.005

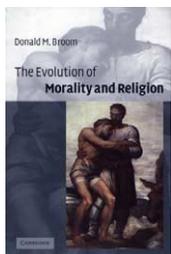
#### Book Reviews

## Preaching morality and metaphysics

*The Evolution of Morality and Religion* by Donald M. Broom, Cambridge University Press, 2004. £18.99 (272 pages) ISBN 0521529247

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With political and media interest in religion increasing, the academic study of religion is undergoing a renaissance. Nowhere is this more apparent than in evolutionary circles, as is evidenced by a recent salvo of books and articles aimed at understanding the selective pressures that have shaped religious behaviors and beliefs (reviewed in [1,2]). Into this

barrage, Donald Broom has fired *The Evolution of Morality and Religion*, one of the few recent additions to the literature that examines the relationship between religion and morality. Broom presents two primary arguments: (i) that morality has evolved in humans and other social species as a consequence of natural selection; and (ii) that religions are structures that support morality. Neither argument is new, nor does Broom advance our understanding of these issues beyond what others, such as Franz de Waal, Matt Ridley or Richard Alexander, have already offered. However, what is novel about the book is

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Available online 9 September 2004

Broom's evangelical assertion that religion, minus the fire and brimstone, has value for us all. Although Broom deserves credit for having the courage to express his personal views on moral and religious issues, and for examining topics outside his area of expertise, his arguments remain incomplete and suggest a lack of familiarity with the emerging literature. As a result, *The Evolution of Mortality and Religion* fails to contribute to this rapidly growing field.

Broom limits his analysis to contemporary world religions such as Christianity, Hinduism and Islam, which are only a tiny fraction of the human religious database, and probably not the segment that is most relevant to discerning the origins of religion and morality, and their inter-relationship. Contrary to Broom's assertion, moral codes are not the core of all, or even most, religions throughout human history. Ironically – but indicative of the narrow scope of the book – he claims his position is 'well supported by the holy writings of each religion.' The presence of moralizing gods, which defines and directs the behavior of a community, varies ecologically and is related to group size, social stratification, resource levels and external conflict [3,4]. The transition from nomadic foragers to sedentary agriculturalists was probably the key event that wedded morality to religion. However, Broom's evolutionary scenario, which blindly leaps from mammalian morality to contemporary world religions, ignores how this marriage developed and how it is foreign to the shamanistic and healing religions of hunter-gatherers. Disappointingly, Broom never addresses the crucial issue that should have been at the heart of his inquiry: why does religion become entwined with the moral structure of society when humans settle into sedentary resource-acquisition strategies?

Instead, Broom exchanges his lab coat for a frock and uses *The Evolution of Mortality and Religion* to promote his moral and religious agenda. He argues that the morality of a behavior should be determined by whether it harms another individual. Although this is not a contentious position, the conclusions he draws from this starting premise might strike some readers as surprising. Prostitution, pornography and strip clubs are morally acceptable because they do not harm anyone (somehow the exploitation of the sex-trade workers themselves is disregarded); however, free trade creates wealth disparities and, thus, is deserving of moral wrath.

Broom believes that a biological explanation of spirituality 'may well encourage people to be part of a religion because they understand it and its benefits better.' Although he is an advocate of spiritual beliefs, Broom is certainly no religious zealot. Indeed, the version of religion he promotes strips religion of its religiosity. For the continued survivorship of religion,

he urges religious laypeople and leaders to discourage differences among religions, alter myths and beliefs that are contradicted by widely accepted knowledge, simplify the concept of God so that it is easier to comprehend and make religious practices easier to understand and 'less repellent' to skeptics. Religions should be based on a rationally deduced morality, all else is peripheral and expendable. However, Broom's advice is more likely to be a poison than a panacea. Considerable historical and sociological evidence suggests that freeing religion from its mystical trappings only reduces the commitment levels of adherents [5]. Moreover, many of the fastest growing religions, such as Islam and The Church of Latter-day Saints, make significant demands of their members, including the acceptance of non-rational belief systems [6]. In his fervor to rid religions of their 'erroneous aspects', Broom never stops to ask why all religions endorse supernatural beliefs. Recent work by cognitive anthropologists has shown that counter intuitive beliefs, such as strolling on water or virgin births, are attention grabbing, memorable and facilitate transmission [7,8]. Belief in supernatural agents seems to be part of the essential machinery of religion and, tellingly, Broom himself does not entirely eschew such beliefs. He repeatedly declares that there is a spirit within society and, by the end of *The Evolution of Mortality and Religion*, he offers his own theological interpretation of God, completely abandoning any pretense of scientific exploration.

Broom is correct that antagonism by some evolutionary thinkers toward religion has probably impeded progress in understanding the interrelationship between religion and morality. But *The Evolution of Mortality and Religion* is evidence that religious sympathies do not necessarily produce progress either, although, in some ways, Broom's distinctive voice is refreshing.

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