Towards a Neurotheology

Author(s): Andrew Newberg

In this, the final installment for, "WGWGA," I would like to start by stating how much I have enjoyed participating in Metanexus and discussing these intriguing ideas with everyone. Many of the ideas we considered are certainly covered in more detail in the book, but there are so many ideas surrounding the issue of the neuropsychological basis of religious experience, that we could devote years of discussion to considering the implications. I hope that you have enjoyed this discussion as much as I have, and I hope that you have come to think about the mind and brain in a deeper and more comprehensive manner. This installment leads to some of the conclusions that we reach in the book. In particular, we will consider the notion of neurotheology as a new way of considering theology as both a metatheology and a megatheology.

A metatheology can be understood as the overall principles underlying any and all religions or ultimate belief systems and their theologies. A metatheology comprises both the general principles describing, and implicitly the rules for constructing, any concrete theological system. In and of itself, a metatheology is devoid of theological content, since it consists of rules and descriptions about how any and all specific theologies are structured. We propose that neurotheology, as presented in this book, is the best current contender for the title of "ultimate metatheology." Indeed, barring a major Kuhnian shift in fundamental scientific paradigms, it is hard to see how neurotheology, in general principle at least, can fail to constitute an ultimate metatheology. While building up the case for neurotheology, most of this book has been, in fact, elaborating a metatheology. In other words, the general principles by which any and all theologies are formulated are contained within the structure and function of the mind/brain as described in the previous chapters.

An ultimate metatheology must account for three things. First, it must describe how and why foundational, creation, and soteriological myths are formed. Second, it must describe how and why such myths are elaborated into complex logical systems which we call specific theologies. Third, it must describe how and why the basic myths and certain aspects of their theological elaborations are objectified in the motor behavior that we call ceremonial ritual.

Neurotheology addresses these three constitutive demands of a metatheology by referring to three basic neuropsychological explanatory elements of the mind/brain. These three are:

1. The Cognitive Imperative.
2. The Cognitive Operators.
3. Arousal/Quiescent states.

The Cognitive Imperative

The Cognitive Imperative provides the motive force to explain any phenomenon or series of phenomena either simply or systematically. We have called the Cognitive Imperative the "drive of the neocortex." It represents the impetus to apply the Cognitive Operators to incoming input in some understandable fashion. The predominant operator activated by the Cognitive Imperative is the Causal Operator. As we have seen, the mind/brain automatically sets up causal sequences to explain any phenomenon or cluster of phenomena. When the initial terminus of any strip of reality is not given in the sensorium, we have seen how the mind/brain generates an initial terminus or cause of that strip of reality in the form of a god, demon, numen, or other power source. Only the artificial scientific social contract which developed in 17th century Europe and by which natural philosophers refrained from positing any initial terminus unless it was observed or immediately inferrable from sense data, prevents modern science from generating gods, demons, or other power sources. However, it appears that the mind/brain naturally posits such entities. Even the most rational of scientists and philosophers must occasionally construct and deal with such entities if only in their dreams.

Thus, we see that the Cognitive Imperative is immensely powerful. There is a mountain of evidence generated by cognitive psychologists that this is indeed the case, but a simple example here will serve to make the point. A number of years ago, a mild earthquake shook the Philadelphia area in the middle of the night. The noted physical anthropologist, Professor Solomon Katz, his graduate students, and one of the authors (E. d'Aquili) did an informal study involving random telephone calls to residents of the Philadelphia area to ask them questions about the earthquake. Some were asked, "What did you think happened last night?" and others were asked, "What was the first thing you did when you felt the earthquake?" The first question elicited, as one might expect, a broad spectrum of answers. Many correctly thought that it was a mild earthquake. Many others opted for a heavy truck passing outside or for a furnace exploding. There was even one bizarre answer, "The universe reached critical mass." All of these responses, whether common or bizarre, were predictable in that they were cognitive responses to the question, "What did you think happened last night?" The really interesting result of this study was with the respondents to the question, "What was the first thing you did when you felt the earthquake?" In spite of the form of this question, virtually every respondent answered first by giving what he or she thought had occurred before going on to saying what he or she did. The mind/brain clearly seeks an explanation for an indeterminate stimulus forcefully and immediately, and even gives that cognitive response later when none is asked for.

Therefore, the Cognitive Imperative, the driver of the neocortex, compels human beings to try to understand their environment, to structure myths as explanatory stories, to generate gods or power sources "to fill in the causal gaps", and to squeeze every ounce of truth from the myth by the application of logic and deductive reasoning via the Cognitive Operators. Such is the force of the Cognitive Imperative that human beings have no choice but to structure myths whether in their scientific form (a special case) or in their more primitive form embodied in dreams, daydreams, fairy tales, folk tales, or other related manifestations of myths.

Cognitive Operators

As we have considered in the previous installments, the cognitive operators represent neural networks which operate upon sensory input to organize it and modulate it in specific ways. In the aggregate, this function forms our cognized environment. The causal and binary operators are particularly active in the generation of myth. The organization of the world, and myth content, into polar opposites or, at least, into contrasted dyads, is the obligatory function of the binary operator. The contrasting of myth elements into opposites often presents the "myth problem" which must somehow be resolved. The contrasting of pairs such as good and evil, divine and human, life and death, etc. constitute the polar tension essential to the myth story. As we have elaborated upon earlier, attempts at resolving such myth problems can be either cognitive, as part of the myth structure, or profoundly existential or emotional as a result of incarnating the myth into a ritual matrix.

The mind/brain can then operate on a myth as it is elaborated by a particular culture, extracting explicit meanings from the myth and deducing various conclusions from elements of the myth. Such conclusions are not specifically contained in the myth. Rather conclusions are derived in the form: if element "A" of the myth is true (as indeed the whole myth is believed to be true, at least in primitive societies), then "X" must necessarily be the case for "A" to happen and "Y" must necessarily be concluded as a consequence of "A". With this kind of reasoning, theology is born from religious myth. Since theology is based on logic and deductive reasoning, the causal Operator (this time operating on abstract concepts), the Abstractive Operator and the Quantitative Operator all are integral to the formation of the organized body of knowledge that we have traditionally called a theology.

Arousal/Quiescent States and Rhythmicity

Since all religions present their myths, and to some extent their theologies, within some sort of ritual context, from minimal to maximal, any inclusive metatheology must account for human ceremonial ritual. Once again, we have described in previous chapters the effect of the various Arousal/Quiescent states on the activation of pleasure centers. Furthermore, we have seen the effect of slow and fast rhythmicity on Arousal/Quiescent states and ultimately on the generation of pleasurable experiences from mild satisfaction to ecstatic blisses. We have also seen how this rhythmic-Arousal/Quiescent system can briefly activate the Holistic Operator generating powerfully unitary as well as pleasurable experiences. Finally, we have described how such unitary experiences can create the existential sense of the union of elements which are logically opposed in the myth prior to the myth's having been exposed to ritual expression. Such mystic unions of opposing mythic elements, as well as the sense of the mystic union of all participants in a ritual via activation of the Holistic Operator, provide experiences that are among the most intense that a religion can provide for one of its practitioners. Such experiences as manifestations of the divine often provide a retrospective "confirmation" of the truth both of the religion's foundational myth and of its theological elaboration.

Lastly, any metatheology must account for intense mystical experiences derived from meditation and to some extent from prayer. In chapter 6, we proposed neurophysiological mechanisms which account for all of the major religious and spiritual experiences generated by the mystical mind.

To summarize this section, therefore, we can see that neurotheology constitutes a great formal apparatus which is required for the structure and understanding of any specific myth, its theological elaboration, its incarnation and resolution in ceremonial ritual, as well as the otherworldly, transcendent, or mystical experiences that certain practitioners of all religions enjoy. Although neurotheology as a metatheology is devoid of specific theological content, neurotheology is full of content at the level of the neuropsychology which both underlies and constitutes it.

I will end with the notion that neurotheology and the approach followed in *The Mystical Mind* may not only be a metatheology, but a megatheology. Just as a metatheology is devoid of content, a megatheology should contain content of such a universal nature that it could be adopted by most, if not all, of the world's great religions as a basic element without any serious violation of their essential doctrines. Alternatively, a megatheology should have such universal content that it could be used as the basis for the development of a new specific theology, hopefully one more universal in nature than those arising from the cultural exigencies of humanities remote past. It has been our belief that neurotheology can actually function as a megatheology as well. This is based in large extent on the most profound mystical states, and in particular, AUB. However, the possibility of neurotheology as a megatheology is quite compelling, but is most complex and I will simply end things here by dangling that carrot and to entice all of you to consider the relevance of "WGWGA" in understanding not only the biology of religious experience, but in understanding the mind, consciousness, reality, and experience itself.

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