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Andrew B. Newberg, Principles of Neurotheology (Ashgate science and religions series), Farnham, Surrey, England: Ashgate Publishing, 2010 (276 p.)

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Newberg presents fifty-four principles for the foundations of Neurotheology, a new scientific discipline combining theology and neuroscience. The title suggests that this work might have the same importance for Neurotheology as Newton's *Philosophiæ Naturalis Principia Mathematica* had for the foundations of physics. However, most of Newberg's principles seem to be by far too vague, unspecific and trivial to allow for such a comparison. For instance, principle 1, the "principle of definitions" states that neurotheology "should strive to provide and seek clear definitions for the topics of its inquiry" (p. 23). According to principle 9 neurotheology should be pursued "with a great passion for inquiry, openness and willingness to explore a broad array of topics and ideas" (p. 57). Principle 10 reads: "We must proceed cautiously, but not fear whatever possible outcomes we might find through neurotheological scholarship." Principle 14 reminds the scholar to be "as rigorous as possible" (p. 67) regarding all relevant aspects, and principle 15, the "principle of assumptions", emphasizes that he should clearly identify the assumptions of his investigations (p. 70). All this could be said for any other discipline as well.

The reason for the inclusion of general principles of this kind might be that Newberg's definition of neurotheology is kept purposely "extremely broad" (p. 46), such that neurotheology includes "scientific, theological, sociological, anthropological, spiritual and religious elements" (p. 45), i.e. virtually all disciplines. As a consequence of this generality, Newberg believes that neurotheology can address and perhaps solve a great variety of major philosophical and theological issues (cf. the summary on p. 267), in particular the questions regarding the reality of our experiences (p. 252), the existence, nature and attributes of God (principles 14–15, p. 231–236), the existence and nature of the soul (p. 243–245), the mysteries of free will (p. 237), the nature of ethics (p. 326–238), the "nature and mechanism of salvation" (principle 49, p. 245) and even the truth or falsity of religious traditions and religions as a whole. Moreover, Newberg claims that neurotheological studies have the power to initiate major religious paradigm shifts, they might even "effect an overall doctrinal change to an entire religion" (p. 144), for example by addressing the issue as to whether the differences between various religions and across traditions "are truly distinct or are merely different interpretations of the same phenomena" (p. 167). "A potentially major paradigm shift would be to determine that one particular religious tradition is the correct one while all others are false" (p. 59). Another possible paradigm shift would result if neurotheology "discovers that *all* religions are wrong" (ibid.), for it might be possible "to yield a conclusion in which religion and spirituality is completely reducible to neuronal firings and brain function" (p. 145), such that "religious experiences and ideas are nothing more than the creation of the human brain." (p. 141). As for the question of the existence of God, it could turn out that "neurotheology ultimately proves that religion is nothing more than a manifestation of the brain's functions" (p. 62). In this case, Newberg adds, neurotheology "still remains viable in helping to explain why this is so and how religion can be modified or even eliminated to accommodate this new information." On the other hand, it may also be "ultimately determined that there unequivocally is a God" (ibid.). In principle 41, Newberg states that neurotheology "should address any and all (!) theological questions" (principle 41, p. 221). It should pursue its potential applicability as a "metatheology" (the discipline that evaluates the overall principles underlying any and all religions, cf. principle 12, p. 64) and as a "megatheology" as well (principle 13, p. 66). A megatheology is described by Newberg to be a theory whose content "is of such an universal nature that it could be adopted of most, if not all, of the world's great religions as a basic element" (p. 65). Newberg adds that a megatheology must be

acceptable “to all religions” and “even the non-religious” (p. 66). To sum up, neurotheology in Newberg’s view seems to have the potential to become one of the most fundamental doctrines ever, a most powerful synthesis of philosophy, theology and science.

While all the issues mentioned in the preceding paragraph have been ever since discussed by philosophers and theologians, it remains questionable whether neuroscience (or sciences in general) can in fact essentially contribute to the topics, let alone provide us unequivocally with the ultimate answers, as Newberg seems to suggest at least in some passages. Up to date, neuroscience does not much more than to detect and scan the brain activities that correspond to different tasks, behaviors and emotions of test persons. It is hard to see how any findings of this sort can help us to find the answers to the great philosophical and theological questions of mankind. Indeed, in other passages of the book Newberg himself reminds us to be cautious in this respect. Most interesting in this connection is principle 16: “We must not assume what constitutes ‘necessity’ until we have adequately evaluated all of the possible pluralities.” (p. 83). Newberg calls this principle “Neurotheology’s Razor”, and explains that this is the converse of Occam’s razor (“pluralitas non est ponenda sine necessitate”, turned into “necessitas non est ponenda sine pluralitate”). Newberg gives the following example: The materialist argument that “God cannot exist because God is not measurable by any current device” should not be deemed sufficient. It is not necessarily true, because one has not considered the plurality of all possibilities: it remains possible that God will be detected by future measurements or that he is totally immeasurable but can be accessed through human consciousness. Another principle is also important in this connection: “Care must be taken when assigning causal relationships or eliminating spiritual explanations when interpreting brain studies of religious and spiritual phenomena” (principle 22, p. 126). If Neuroscience detects any neurophysiologic correlates of spiritual experiences, then this correlates “must be considered just that – correlates – rather than causal mechanisms by which such experiences occur” (p. 168, cf. p. 178). In particular, any measured brain activity that can be associated with the experience of being in God’s presence does not suggest “that the brain activity *caused* the experience to occur”, for it might be as well the case that the findings simply reflect “the brain’s response to the experience of actually being in God’s presence” (p. 55). The neuroscientist typically holds that the material world is primary and consciousness somehow arises from and is caused by the functions of the brain. On the other hand, according to the prevailing religious account consciousness itself is primary such that it exists outside of material mechanisms, while the world (including the brain) arises either from universal consciousness (in Eastern traditions such as Hinduism or Buddhism) or from God’s consciousness (in Western traditions). Which view is the right one? Is consciousness created by the brain or vice versa? Newberg maintains that neurotheology should be open to both views (cf. p. 190-193), carefully “combining scientific investigation with phenomenological analysis”. Newberg himself suggests that it is also possible that “analogously to the wave-particle nature of light, perhaps awareness and matter merely represent two different things of the same thing” (p. 193).

In addition to the somewhat overestimated potential power of neuroscience to solve fundamental philosophical and theological problems, there are some further debatable views and arguments presented in the book. Newberg seems to follow Michael Gazzaniga’s problematic views on ethics, asserting that there are no “hard-and-fast truths” in ethics and that ethics is “contextual, emotion-influenced, and designed to increase our survival” (p. 213). Still more problematic is the holistic Buddhist and Hindu view, treated by Newberg with great respect, according to which “there may be no way of separating good and bad”, and hence “morality has no role” at all (p. 211). Newberg asserts rightly, that ethics is intimately connected with the existence of free will, which in turn has something to do with causality. But is it true that “when causality is applied to the human world, the result is ... ethics” (p. 75f)? And that “causality within a sequence of reality allows for free will while causality that exists external to a given sequence leads to determinism”? (p. 212). Here, a more detailed discussion would have been expedient to avoid confusion. As for neuroscientific research on this topic, Newberg refers only to the research of Rodolfo Llinas who “demonstrated

that a millisecond prior to a person making a conscious decision, there is electrical activity in the brain“ (p. 237). Actually, the time gap amounts to much more than only one millisecond, namely to up to 250 milliseconds according to Benjamin Libet. Newberg points out that “we still can choose to act out or not act out a particular behavior that the subconscious brain comes up with” (ibid.). This seems to be essentially Libet’s veto-theory of free will, based on the fact that there is no one-to-one correspondence of the free will decision and the previous electrical activity. But then it seems odd, that Newberg does not mention Benjamin Libet and his crucial experiments (1983). He also could have mention the related experiments of John Dylan Haynes (2008), where brain functions have been discovered, preparing a possible free will decision up to 10 seconds in advance. Although Newberg criticizes one-sided physicalism, he himself adopts some physicalistic views at least by the choice of words. E.g. he asserts that “to hear requires the brain to hear” (246) and that “if it is the brain that reads the sacred texts, hears the sacred stories, and utters the sacred prayers, then it is the brain that helps human beings interact with God” (246). Hence he speaks as if the person is to be identified with its brain. On the other hand, Newberg also asserts that “the brain informs us what it thinks is real” (251), as if the brain is an independent person that can communicate with the self. Both views are of course highly debatable. This applies also to Newberg’s statement that God can communicate with us “through the various physical parts of ourselves“ (p. 241).

Aside from these critical points, the book has to offer also some very interesting and fascinating thoughts and topics. First of all, Newberg discusses in some detail the currently most important brain imaging techniques (EEG, MRI, SPECT, PET , cf. p. 122–125), he informs about studies in the field of neurotheology concerning for example the effects of religions and spiritual activities on health (p. 200–209), and he reflects on specific cognitive processes that may influence religious beliefs (p.73–77), namely abstract thought, quantification, identification of causal relationships, establishment of dualistic concepts, reductionism and holistic contextualization. He also gives interesting thoughts about neurotheological hermeneutics on spiritual attitudes such as willfulness and surrender, the feeling of wholeness and fragmentation, rationalism, logic and abstract thought, causality, quantitative process, binary opposition, emotions and feelings, permanence, changes and spiritual transformation (p. 91–114, cf. p. 228–231).

Perhaps the most interesting topic of the book is Newberg’s treatment of the question how we can know what is “really real” and his exposition of the nine possible “primary epistemic states” (p. 253–263) in this context. A primary epistemic state is “determined by how human beings sense and make sense of reality” (p. 254), and the possible primary states are essentially influenced by the following three parameters: *perception of objects* which can be manifested as (a) either multiple discrete things or (b) as a holistic union of all things, *relationships between objects* that are (a) either regular (determined by regular causality and logic) or (b) irregular, and *emotional (affective) responses to the objects* that are (a) either positive or (b) negative or (c) neutral. Accordingly, there are nine states. The first one consists of the experience of a multiplicity of discrete objects, of regular relationships and neutral affect. This state is the normal state called “baseline reality”, being the state of most people in most of their lifetime. In state 2, we also have discrete objects and regular relationships, but positive affect. This state has been called “Cosmic Consciousness” and is characterized by overwhelming happiness, universal understanding and love, with a sense of purposefulness to all things and to mankind’s place within the universe. One enters this state often by a religious conversion in the context of western religious traditions, e.g. by a conversion to Christianity. In state 3, we have multiple discrete objects, regular relationships and negative affect. This leads to an existentialist perspective in philosophical terms, and people in this state often seek psychiatric help being extremely depressed. The next three states 4, 5 and 6 are still states associated with the perception of a multiplicity of discrete objects, but contain irregular relationships between the objects, while the universe is evaluated to be neutral (state 6), positive (state 7) or negative (state 8). Examples of this type of states include dreams, drug induced states and schizophrenia. The final three possible states 7, 8 and 9 involve the perception of unitary

holistic reality without any different objects; these states can be called mystical states. In such a state there are neither regular nor irregular relationships between things, simply because there is no perception of different things that can be related to each other. Thus, these states can only be different because of different affective evaluations: The unitary state with positive affect (state 7) is most often described by having the mystical experience of “God” or the “union with God“, for example in hinduistic advaita-vedanta practice. The unitary state with neutral affect (state 8) is referred to as the experience of void or infinite nothingness in religious literature, and fits into buddhistic philosophy. State 9 would be the unitary state with negative affect, according to which the ultimate reality is a kind of hell (cf. p. 231), but it seems to be only a theoretic possibility, since there are no clear references to an actual experience of this kind (p. 260). Now, “it is the nature of a primary epistemic state to perceive that state as actual reality“ (p. 258) and once somebody leaves a state and settles into a second one, he typically perceives the original state to no longer represent reality, but has the impression that the prior state was an illusion, delusion or hallucination, while the current state is really real (p. 253 and 258). But in this respect there is a remarkable exception: the mystical unitary states are experienced as being ultimate reality and the sense of reality associated with those states do not vanish when the mystic leaves the unitary state and returns to baseline reality. According to Newberg, this may be the clue to solve the old philosophical question about what is actually real (cf. p. 253 and p. 262). The problem here is what Newberg calls the “uncertainty principle” of neurotheology (principle 39, p. 214): “since the brain cannot readily escape its own functioning, there is a fundamental uncertainty in all beliefs about reality”. The only way around this problem seems to be “to get outside of the brain”. Now the unitary mystic experience “claims explicitly to do just that“ (p. 262) since in this experience the subject vanishes and feels to be united with ultimate objective reality. However, one could object to Newberg, that the experience of mystical unity states is not the only experience of being released from the confinement to the brain. Rather every act based on self-reflection and every experience of comprehending objective truths (e.g. in mathematics) is a quite similar experience, and has the advantage to be known not only to mystics.

In fact, Newberg himself seems to acknowledge the reality of the physical world, contrary to the radical view of unitary mysticism. In the last pages (p. 263–265), he exposes three possible worldviews. The first is the view of some Hindu philosophers and mystics who have experienced profound unitary states, such that they come to believe that everyday experience (including the baseline reality state with multiple objects and causality) is only a realm of illusion. The second one is the opposite view, according to which baseline reality reflects the truth and the mystic unitary experiences have to be rejected as mere illusions. This, Newberg comments, is “generally the position of science, and frequently atheists” (p. 263). However, there is a third possible view, which integrates the two first ones, holding that the states of unity and multiplicity are both real, but on different levels. There are three types of this third view. Two approaches “involve giving priority to one state while still recognizing the importance and realness of the other”. The first type of this view gives priority to the experience of unitary reality. An example is the Christian synthesis, where the perception of the unitary state is called God, who has created the secondary, but still real realm of the multifaceted universe of baseline reality. The second type gives priority to baseline reality, but maintains that there is a unitary final expression of the material universe, that can be described for example as “the total sum of the physical laws which describe the universe” (quotation from Carl Sagan, p. 264). Finally there is a third type that seems to be Newberg’s favorite one, “in which the different epistemic states are fully integrated“ (p. 265). Newberg hopes that neurotheological research will continue to deal with this fascinating question. It may be conceded, that neuroscientific insights can be used to weaken or strengthen the traditional philosophical arguments, but we cannot hope to get the ultimate answer by scanning the brain. Not only because science cannot supersede philosophy in principle. But also because the unitary mystic state, that plays an important role in Newberg’s neurotheological concept, is not open to immediate neuroscientific investigations. While the mystic experiences the unitary state, he cannot be

interrogated, and thus, as Newberg remarks (p. 261), “there will always be the inherent uncertainty in knowing when such a state occurs so that one never knows when it should be measured.”