

BETWEEN NEUROBIOLOGICAL FINDINGS, CULTURAL CONTEXTS AND INDIVIDUAL ATTRIBUTIONS. THE SPECIFICITY OF THE PSYCHOLOGICAL APPROACH TO RELIGION

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The experience of God can be simulated with the laboratory
(Persinger, 2003, p. 292)

We have a right to demand, however, that they should not mistake their preliminary education for complete training, that they should overcome the one-sidedness that is fostered by instruction in medical schools, and that they should resist the temptation to flirt with endocrinology and the autonomic nervous system, when what is needed is an apprehension of psychological facts with the help of a framework of psychological concepts
(Freud, 1927a, p. 257)

Research studies on neurobiological correlations of individual religiosity are today using ever more refined and targeted instruments. Such instruments can be useful to the psychology of religion on the condition that they clarify certain methodological and epistemological issues. These issues are highlighted in a critical summary of recent research on the subject, such as those of d'Aquili and Newberg, Persinger, Moody, Joseph, etc). In particular, what appears to be totally confusing is the concept of "neurotheology" and similar theoretical constructs. These are based on a presumption of an "experience of God" on the neurological level. According to the author, neural structures and processes are a-specific (and therefore a-religious). The "religiosity" of an experience is the result of a conscious reference to the Transcendent on the part of the religious person and within a determined cultural context. While contrary to any form of reductionism, what is being highlighted is the specificity and complexity of the psychological approach to religion. This also takes into consideration not only the neurobiological substratum (body-brain-mind) of any psychic behavior, but also the socio-cultural and linguistic dimension, and the attribution processes responsible for the progressive shaping of personal religion.

In a volume that addresses the fundamental and complementary dimensions of psychology of religion, particularly the neurobiological and cultural perspective, my position is to highlight the integration that a psychological approach has to pursue, that is, between the findings of neuropsychology and the neurosciences in general, and those of cultural psychology; of weaving data collection with meanings. Psychological interpretation has a fixed specificity of its own. It points at the subject-person understood as a global organism, an Ego-Self, a unity of biological organism and consciousness, situated in a relational and historical-cultural context.

The point of departure is the acknowledgment that what the neurobiologists assume to be an object of study ("religion", "mysticism", "spirituality", the "experience of God") is a complex human phenomenon, which prior to the research itself, is defined by culture, by individual

experience, and at times, by the same psychological inquiry. The neurologists' object of research, ultimately, is a bio-psychological-cultural construct. It appears, therefore, problematic to pretend to study such a psychic attitude by using instruments, which by definition, measure only neurobiological constructs.

Bearing in mind similar epistemological and methodological issues related also to the use of the concept of spirituality and/or religion, I propose to examine some of the most relevant research conducted by neurologists and neuropsychologists, with the intent of capturing their characteristics, advantages, criticism, and views.

Neurobiology and psychology of religion. Reasons for an encounter

Psychologists of religion have always acknowledged the importance of the interaction between physical states and religious experience. This can be confirmed both by historical analysis, and by examining the current approaches found in the most important textbooks of Psychology of religion (Hood jr, Spilka, Hunsberger, & Gorsuch, 1996, pp. 191-223; Paloutzian & Park, 2005b; Wulff, 1997, pp. 49-116).

Only in the last few years, however, has this attention amongst researchers shifted onto a particular theme, that is, of the interaction between neurobiology and the psychology of religion. Many are hoping for a dialogue, even though what is questioned is the real advantage that the psychology of religion could derive from this (Wulff, 1997, pp. 112-116). Helmut K. Reich (2004) has published a valid review of the current status of the relationship between the two disciplines and has identified the mutual advantages that each could benefit from. According to him, psychology of religion in particular, could benefit from neurobiological research in evaluating the different theoretical conceptions, for instance, on the nature of religion and spirituality, or in creating dynamic models of the relationship between the individual and God, and of religious development, (cf. Reich, 2003).

The issue of the relationship between religious beliefs, rituals, and experiences and neuroscience seems to be taken up so often by researchers of other disciplines known as the cognitive sciences, than by psychologists of religion, that they are proposing a new "cognitive science of religion" (Andresen, 2001). This approach is gaining some success, also thanks to the media publicity, because of the sensational new proposals intended to reduce religion and neurological functions to a unitary thing. Sometimes they go even further by locating the origin of religion, both from the perspective of ontogenesis and that of phylogenesis, to the brain structures (expressions in the media or in the Web, such as, "God in the brain", the "God module", or the "God spot" have caused a considerable stir).

Amongst those disciplines interested in the subject, there are some particularly stimulating ones, such as cultural anthropology (for a critical presentation, cf. Terrin, 2004); sociobiology, which holds the position of "co-evolution of genes and culture" (Wilson, 1975; cf. also Wenergrat, 1990; Wilson, 1978); and philological phenomenology of religion (cf. e.g. Burkert, 1996).

In the literature of the psychology of religion, one could also encounter isolated attempts at twinning religion with neurobiology, in particular:

a) within that tendency called "Biology of God" which upholds the biological-developmental character and roots of the relationship with God, such as in the works of Alistair Hardy (1975), who as a zoologist and ethologist, derives his conclusions from comparison with animal behavior;

b) within the more strongly evidenced and more controversial form of "Theobiology". This is a theology based on empirical and biological sciences, such as those particularly sensitive to gender issues and which open up to, and possibly accentuate, feminine, if not feminist interpretations (Rayburn, 2001; Rayburn & Richmond, 1998).

“Neurotheology” and the related issues

The so called “interdisciplinary” nature of “Neurotheology” has generated a wider interest among researchers, such as neurologists, biologists and anthropophenomenologists. The term coined by James B. Ashbook (1984) appeared for the first time in the journal *Zygon*. This publication, as confirmed by the subtitle *Journal of Religion & Science*, claims the possibility (and hides the risk) of a formulation that combines together diverse disciplinary fields. (*Zygon* in Greek is the yoke that binds a pair of oxen to work together). This circle seems to gain an enthusiastic support. But it is also characterized by epistemological and methodological ambiguities. The two serve as *humus* for the study of some of the research which I will be discussing later on. For this reason I will be dwelling shortly on this.

In the field of Neurotheology, the most representative work in the current *status quaestionis*, which reflects both the possibility of new views and as well as, the uncertainties and the conceptual and methodological limitations of this approach, is to be found in the vast collection edited by Rhawn Joseph (2003). *NeuroTheology, Brain, science, spirituality, religious experience*, is an indiscriminate juxtaposition of detailed reproductions of empirical research and doubtful interpretative speculations, famous quotations from philosophers and psychologists, socio cognitive research, neurological maps, or visual schemas of cerebral activities, and accounts of idiosyncratic episodes and experiences. While largely in favor of this sort of “neo-discipline”, this volume does not spare a few openly critical remarks of this general formulation. Amongst these one finds that of Massimo Pigliucci (2003) who drastically holds the impossibility of a neurotheology itself. While theology is a discourse about God, neurobiology speaks about the nervous system. Their scope and language cannot be compared.

Is the issue, therefore, closed? In reality, I am also of the opinion that a “neurological theology” or a “theological neurology”, could perhaps sound provocative and teasing to the general public (and to the market) in making it popular through the mass media, but it would still be devoid of any scientific validity, as I will show later on.

However, I believe that the formal distinction according to which the neurological belongs to the world of data and has to be studied in the perspective of causality, whereas the theological belongs to the world of meanings and has to be understood within the realm of interpretation, cannot be that sharp. This applies both to the level of reality (the thing itself) and to the descriptive level, which is the domain of the sciences.

If one were to adopt a global view of the human person, including the religious dimension, one sees that all the complex relations between mind, brain, and body; between nature and culture, between genetic endowment and environment; and between ontogenesis and phylogenesis, that apply to the field of psychology apply equally to the field of psychology of religion. In this case the “conjunctive” paradigm *et-et* (both-and) is more fitting than the “disjunctive” one *aut-aut* (*either-or*). In particular, it is more relevant to speak of the unity between body-brain-mind (not only brain-mind), because the mind adapts its own functions and structures in response to the stimuli that come from the body. Moreover, it memorizes the most adequate sensations and responses in order to adapt. We can confirm this by a trivial example, such as when we step on an escalator that we do not know is actually out of order. We get confused and it takes some time before we adapt to the new situation of making that movement with our legs, which, otherwise, would have been a spontaneous one on a fixed staircase. Our senses have already anticipated different impulses related to brain activity, which are adequate to ordinary experiences.

The interaction between the neurobiological and cultural dimensions in every human experience is a fact that cannot be denied. Both have to do with the individual religious experience. The psyche emerges as a crossroad between a neurobiological organism and a determined, but continuously, historically changing culture. The human person worships that God who is presented to him by culture, and also through his body-brain-mind since he is (also) his own body. There is no doubt that without the neurobiological apparatus and processes, there is no possibility of being

religious, of praying, or meditating... But this does not mean that it is the neurological apparatus which is religious, or that God is in the brain.

The unitary reality of the personal psyche (and of the psychic attitude towards religion) is the complex result of multiple factors. On the contrary, on the level of scientific research, different and discreet approaches are taken, depending on the different perspectives of each discipline. But this creates methodological problems and difficulties in their interaction, as each discipline identifies its own object and sees the phenomenon from its own point of view only.

In the attempts to study the interaction between the two disciplines and the two perspectives, it is important to avoid rash conclusions resulting from reductionistic epistemological thinking and approaches which go beyond their limitations, perspectives, and conclusions and pretend to give an opinion on a more complex reality. Since religion is a subject that involves the very same person of the researcher, when this happens, it results very often in an epistemological derailing and sliding into ontological blunders. In such cases, reductionism, or oversimplification, could very much become the ideological mark of both the debasement and the defense of religion.

The most eloquent case is that of the recent publication of a thick volume bearing the revealing subtitle: *Neuroscience and the Person. Scientific perspectives on divine action*, edited jointly by Specola Vaticana, and the Centre for Theology and Natural Sciences of Berkeley, California (Russell, Murphy, Meyering, & Arbib, 2002). In spite of the huge organizational commitment supporting it, the work has had a very limited impact on both psychological and theological literature. After all, the contributions of psychologists are rare, and the benefits that the psychology of religion could have from it are very limited. This comment does not take into consideration the fact that in many essays found in this volume, the category “divine action”, used in the sense of an efficient cause on psychic behavior, opens up issues of great theological relevance and certainly creates problems from the psychological perspective¹.

In spite of this treacherous ground, it appears to be the demanding but timely task of the psychology of religion, to explore the field, to mark the paths, and to capture the horizons. For this reason I intend to dwell a little longer on a critical review of some of the most known contributions offered by Neurobiology in the understanding of religious experience and practice. In the process of identifying certain research issues and other conditions related to epistemology and methodology, special attention will be given to the important interaction between the neurological and cultural perspectives, so that they could be put to best use to the psychology of religion.

The neurobiological research on religion. Techniques and methods

In their study of neurobiological counterparts of religious behavior, researchers today have at their disposal some sophisticated instruments and precise techniques for visualizing cerebral activity. Amongst these one finds the SPECT (single photon emission tomography) and the PET (positron emission tomography). More recently, new magnetic resonance techniques have been added to the classical unilevel ones, such as the fMRI (functional magnetic resonance imaging), which allows for multilevel computerized tomography and a three-dimensional reconstruction. This makes it possible to study and to measure the brain's functional anatomy as well as the general physiological processes and changes, such as the blood flow and the brain metabolism, and the many aspects of the particular neurotransmitters: serotonin, dopamine, and acetylcholine. For a list of the methods which are currently used in the study of the neurological correlates to religious behavior, and relevant controversial issues, cf. Newberg and Iversen, (2003a; 2003b) and Newberg and Lee (2005).

However, certain methodological problems related to data collection and interpretation, seem to be inadequately solved. I can only mention just briefly some of these. In particular, in a number

¹ It is not unusual in Philosophical and Theological circles, to fall into the temptation of epistemological imperialism. This is an attempt to use and to consider the human sciences as subsidiaries. It is a sort of reductionism “from above”, which is symmetrical but opposite to the reductionism “from below”, a sort of “nothing but”.

of research works one can notice: the lack of an adequate experimental design and precise conditions of control; the prevalent use of methods of observation based, at times, on syndromes related to fortuitous sicknesses or cerebral lesions; sampling problems, and in particular, small sampling size. Furthermore, the neuropsychological research, though precise and detailed, often refers to mental activities (and their concomitant cerebral processes) subdivided into small parts and discrete from each other. There is then the problem of the validation and interpretation of data: what exactly are these instruments measuring; what do these observations mean². All this methodological criticism (in many ways inherent to the same complexity of the experimental control) exposes the meaning and the complexities of formulations which are widely hypothetical, if not deliberate. Moreover, in a field particularly subject to the researcher's bias, such as in the case of religion, the risk of subjective interpretations is especially high. In view of this conflict related to free interpretations one realizes the inevitable influence of a "cultural" interpretation also of the same neurobiological data. A case in point is that the models and the supporting theories (almost all of them neurological) of the so-called "Neurotheology" have had a low impact on neurological literature in general and they are often considered not sufficiently anchored onto experimental data and are unfounded.

With the intent of listing the possible contributions of neurobiology (and eventually, of neurotheology) for the psychology of religion, I will take into consideration some models and research from among those which are mostly known and which have generated a major interest in the international debate.

The "mystical mind". The model of d'Aquili and Newberg

The collection of research and of the number of publications produced by Eugene d'Aquili and Andrew B. Newberg and their collaborators, under the title, *The Mystical Mind* (d'Aquili & Newberg, 1999) has been recently published in a more popular, and passionate, form under the title of, *Why God won't go away* (Newberg, d'Aquili, & Rause, 2001)³. This book has had a remarkable impact among scholars both because of the experimental data which has been made public, and because of the collection of discussions and new research which it has triggered.

In reality, the many decades of years of work of d'Aquili and Newberg offer many reasons of interest, both because of the theoretical system, and the sophisticated research techniques and brain imaging. These have been often reproduced in a number of publications, with a crescendo of complexities, both in the experimental design and, most of all, in the theoretical and interpretative context.

The theoretical model is very complex and elaborate. The observations on religious and mystical experience are connected to a theoretical interpretation that is wider than the general functions of the *encephalus*, in terms of *cognitive operators*. This hypothetical model aims at reconciling the cerebral processes with the mental processes. Every cognitive operator, in fact, is a function that has a "physical" existence that can be experimentally localized in one or more areas of the *encephalus* and is responsible for a specific type of mental activity. The authors identify a holistic operator, a reductionistic operator, a quantitative operator, a binary operator, a causal operator, and an abstractive operator.

² For example: an increase in the activity of a group of inhibiting neurons, as measured by a PET scanner or an fMRI through isolated and distinct scannings, are indicative of an increase or decrease of the cerebral activity? (Cf. Newberg & Lee, 2005).

³ This volume has been translated and publicised in Italy under the catching and mystifying title of: *Dio nel cervello. La prova biologica della fede (God in the brain. The biological proof of faith)*. It is worth mentioning that both volumes have been published after d'Aquili's death (1998) and edited primarily by Newberg. For the sake of simplicity, the text refers to the two main researchers and their collaborators, simply as "d'Aquili and Newberg".

In “religious experience”⁴ two cognitive operators seem to be particularly involved; the causal operator and the holistic operator. The causal operator is implied in the perception of the world as coming from and as being controlled by an agent. The holistic operator sustains the experiences of the altered states of consciousness, in particular, the sense of unity with all that could be central to a mystical experience.⁵

It is precisely in the field of meditation and “mysticism” that the experimental findings of d’Aquili and Newberg have been mostly applied, starting from the analysis of the regional cerebral blood flow through the PET and the SPECT scanning. It is on this point that I would like to dwell a little more, because of the implications related to our discourse of the interaction between the data and attribution principles, rather than on the general model of the brain functioning.

The most renowned and publicized research is that on the neurophysiological changes that take place during meditation (d’Aquili & Newberg, 1993, 1999; Newberg & d’Aquili, 1998; Newberg, Pourdehnad, Alavi, & d’Aquili, 2003). What d’Aquili and Newberg discover during meditation, both with the study of Buddhist monks (Newberg et al., 2001), and with that of Catholic Franciscan nuns (Newberg, Alavi, Baime, Mozley, & d’Aquili, 1997; Newberg et al., 2003) is an unusual decrease of activity of the “posterior superior parietal lobe” of the brain, referred to by the authors also as the “orientation association area” (OAA)⁶.

In very simple words, for argument’s sake, this lobe essentially governs the person’s spatial orientation in the environment; sustains the capacity to distinguish one’s physical self from the external world; and lastly, perceives the nature and form of an external object. Lesions to the parietal lobe usually result in a disturbance of superficial sensitivity, and above all, of deep sensitivity, with *astereognosis* (inability to recognize objects by touch), and *astasia-abasia* (inability to stand or walk). In general, clinical neurology acknowledges that lesions in the posterior postcentral parietal lobe result in disturbances of space exploration and disturbances of space orientation.

During meditation, in particular, “in the most intensely religious moments” (Newberg, d’Aquili, & Rause, 2001, p. 7), the images of the tomography show a low level of activity of this brain area. This thing appears to be quite obvious, given that during meditation there is a voluntary suspension of the many possibilities of sensory stimulation⁷. But d’Aquili and Newberg interpret this decrease of brain activity as a loss of ego boundaries, and an absorption into a whole, up to, using their words, “to be one with the cosmos” and fused into an “Absolute Unitary Being”. They say this while ignoring the fact that the state of low activity of the “posterior superior parietal lobe” can be observed also in cases of delirium or altered states of consciousness induced by drugs, not to mention cases of parietal lesions. In practice, they omit the fundamental methodological criterion which imposes a distinction between a necessary cause and a sufficient cause, as well as the

⁴ The words “religious experience”, “God experience”, “mystical”, “ecstasy” and similar expressions used by the researchers which are quoted here in the text often do not correspond to the meaning I would give them, as I hope this becomes more clear by the end of the paper. However, for the sake of simplicity, for the remaining text I will omit the quotation marks and I will, every now and then, use the terms with the same meaning given them by the authors.

⁵ It is not the case to dwell on the criticism that this model of brain functioning has raised. One need only remark that it is generally unacceptable, (or at least “not proven”, according to the famous non committal Scottish verdict) to the great majority of neurobiologists. Take for example, the called for modifications, since the earliest formulations, by Rodney Holmes (1993) on the same publication *Zygon*. In general, the contributions of d’Aquili and Newberg seem to be rather isolated in the neurophysiological literature: they do not seek confrontation with the thesis of other researchers and have had a negligible impact/ recognition in their publications.

⁶ The authors here deliberately use terms which are not scientifically appropriate. The expression “posterior superior parietal lobe” (elsewhere, also *lobule*) refers more correctly to the hind part of the superior parietal gyrus

⁷ In reality, the explanation suggested by d’Aquili and Newberg is a complex process of a deafferentation of the area of orientation which involves the fundamental structures of the limbic system: the hypothalamus, the amygdala, the hippocampus and the thalamus (d’Aquili & Newberg, 1998; 1999, pp. 21-45). It is worth remembering that this redirection is the capacity of certain brain structures to block the input in other structures.

heuristic principle of William of Occam which states that one should not include too many factors other than those necessary (*non sunt multiplicanda entia sine necessitate*).

Some critical highlights

The authors, while bent to prove the biological origin of religious experience, seem not to give enough importance to the interaction between neurobiology and culture, and between perception and religious language. They hold that “The neurological machinery of transcendence” (Newberg, d’Aquili, & Rause, 2001, p. 125), is derived from the same nervous circuits that govern sexual relations. It could well be the case (broadly speaking, it is always the same brain that makes possible the diverse psychic experiences). Less convincing is their reasoning that seeks to confirm their point by holding that the mystical language related to religious experience could equally express sexual pleasure: bliss, rapture, ecstasy, exaltation, depersonalization, sense of unity. Actually, it is more likely that it is the *language* of the mystics that borrows (at times also in function of personal contexts and cultural scenarios) the words used in a particular language to express sexual-erotic arousal, (perhaps, quite often, even without the mystic having personally experienced such a thing). It is a way of giving a name to a perception of a neurological event which in itself is nonspecific and without a name. One cannot say that the erotic and the religious experience are expressed with the same words, *because*, they have the same neural origin. The erotic language is chosen by the mystic to represent religious experience. But it is culture that gives a name to experience. It is not that a (neuronal) phenomenon finds automatic and spontaneous expression in two distinct behavioral channels (the erotic and the mystic). The language does not proceed immediately from the neuronal processes but presupposes a transmission and a negotiation with culture. Rather, it is the expression of a rare and unusual experience (mystic) by adopting a language that is more generally known (erotic experience).

In the same way, when d’Aquili and Newberg comment that the language of the Catholic nuns of their experiment recalls that of the Christian mystics of the past (Newberg, d’Aquili, & Rause, 2001, p. 7) rather than retracing a universality or an atemporality of mystical experience, they could be referring both to a code and to a culture to understand mystical experience, (Christian Catholic). In this particular experience this could be understood if we keep in mind that our past knowledge forms part of that conceptual framework that helps us understand experiences.

On the contrary, for d’Aquili and Newberg, “Humans, in fact, are natural mystics blessed with an inborn genius for effortless self-transcendence” (Newberg, d’Aquili, & Rause, 2001, p. 113). Thus, for instance, listening to a musical score makes it possible to perceive the essence of mystical union as well as to experience “a mild unitary state” (p. 114). By holding to the same reasoning, I assume that any emotive, affective, aesthetic, and erotic experience could go down as a mystical experience! And what I understand as transcendence, that is, a cultural concept, is reduced to a neuronal mechanism which is embedded in the psychic and ultimately, to be identified with any wish that an individual could have⁸.

This brings to light some epistemological problems regarding the interaction between psychology of religion and neurology: that of how to define “mysticism”, “religion”, and “spirituality”; and their rooting in the surrounding culture. Authors like d’Aquili and Newberg, seem to take for granted the identification of the practice of meditation with mysticism (of a religious form, or even those of a nonreligious form); and also of religion with spirituality.

The basic conceptual ambiguity lies in defining beforehand mystical experience and meditation in neurological terms. This is to say, to identify the neurological with the mystical, and the spiritual with the same experience of God, applying a sort of *petitio principii*. The question here arises as to what is the object of research of, respectively, neurology, psychology and theology.

That which is considered as an object of research by neurologists is a human phenomenon already defined by psychology and by culture (mysticism, meditation, religion, spirituality). The

⁸ For this distinction between Transcendence and self-transcendence, cf. Aletti (2002; 2005).

object of research is, therefore, a psychological-cultural construct. Some neurologists, however, pretend to study these by using instruments that, by definition, are meant to observe and measure only the neurobiological correlates of a particular attitude. This identification of a cultural-psychological phenomenon with a neurobiological process presupposes a chain of logical links which are not in themselves scientific data, but imply a set of attributes of meaning which are dependent both on the culture and on the psychology of the researchers themselves. Furthermore, they assume a basic reductive approach. For instance, the identification of two distinct ways of religious or spiritual experience, that of group ritual and individual contemplation or meditation (Newberg & d'Aquili, 2000), is linked to a particular understanding-interpretation of practices in which, maybe, neither the Catholic Theology of the nuns nor the perspectives of the Buddhist contemplatives, will find a place. Worth mentioning is that the mixed forms, collective and individual, are found in both practices, that is, both in the Catholic world and in the diverse world of Indo-Tibetan Buddhism.

From the point of view of neurology, the meditative and the mystic states do not have a specificity of their own that distinguishes them as "religious". Even though distinct, they are "normal" states of consciousness. They are neurologically defined not in function of their object, but by the neurological processes activated. That which could appear as equivalent on the neurological level (mystical experience, altered states due to alcohol and drugs, effects of surgical operations, etc.) is not equivalent on the psychological level. In other words, it is not God, but traces of the "thought" of God, is present in the mind. Such neurological trace should be acknowledged, both from a theistic as well as from an atheist perspective, against any argument of a "biological proof of the existence of God". From the point of view of neurological structures and processes, the perception of a "divine presence" (or a sense of absorption in an Absolute Unitary Being) is not different, as far as perception is concerned, from the perception of the presence of a hippogryph. The idea of a presence of God cannot be defined as "religious"; no more than the idea of the non-existence of God.

Besides, the term "religious experience" as used by the authors, covers experiences which are so diverse, both psychologically and theologically speaking, that it appears improbable that they could all be explained through a sole neural model. One could think of the difference between an explanation attributed to a causal factor (sense of presence that controls the world) and that attributed to a unifying factor (sense of union with all). What calls also for an explanation from such theory and neurological observation is the juxtaposition of the experience with the whole, with the experience of a personal God as manifested in the monotheistic religions.

The explanation suggested by Paloutzian, Fikes and Hutsebaut (2003) seems to be quite an acceptable one. Making reference to the theory of perception (particularly to the principles of Gestalt, in which the perception of the whole is different from and much more than the sum total of the parts), and to the Attribution Theory, they propose that an interpretation of experiences based on neurobiology has to take into consideration the whole person and the tendency to attribute meaning to events that reflect the surrounding cultural context.

In fact, in the research of d'Aquili and Newberg, the confrontation between the experiences of meditation between Catholic nuns and Buddhist monks highlights the fact that, given that neurobiological events are the same, the perception and the description of that perception change. This is to say that the way these subjects interpreted these experiences was done in the light of the culture supporting it. For the Catholic nuns, it was an experience of God's presence and of their mystic union with him; whereas for the Buddhists it was a sense of absorption of the self and a sense of unity with the whole. This supposes that there is a mental structure rooted to the neurological functioning (universal characteristic), that governs perception, and a capacity to give meaning which is part of the surrounding culture and environment and closely related to one's personal history (idiosyncratic characteristic).

It should be observed that the model of d'Aquili and Newberg, especially in the last formulations, appears as a complex and global one. It suggests that not only a lobe, rather, all the

brain structures, the autonomous nervous system and the neurotransmitters included, function in an integrated manner during meditation (Newberg & Iversen, 2003a). But this does not imply, for these authors, that the religious experience should really be attributed to that complex assembly of neurobiology and consciousness, which in psychological terms, is the person.

Rather, d'Aquili and his collaborators include their position on religion in a holistic vision defined as "biogenetic structural theory". This appears more of a pan-psychic and pantheistic combination. It aspires to present a vision of religion that fuses together science with philosophy, as Rodney Holmes (1993) already observed. In the intent of avoiding an interpretation of religion as a social construct, it seeks the foundations of religious experience in biology. The continuous existence of religious manifestations in the history of humanity, in all their varieties and developments, have guaranteed for the future that God will never abandon human experience ("*Why God won't go away*"). It should show that the human brain is genetically configured to sustain religious experience.

Following d'Aquili and Newberg becomes even more difficult when their theory gets more abstract and distant from the data of empirical observation. Their "neurotheology" sees myths as products of the brain that obeys a "cognitive imperative", using each time different cognitive operations. Starting from the conviction that "the transcendent states from which religions arise are neurologically real" (Newberg, d'Aquili, & Rause, 2001, p. 140) they move on to propose a neurologically founded design of "meta theology". This should explain how the creation and salvation myths were formed, and how they are expressed in the different theologies. Again, it explains how myths and some theological elaborations have been expressed in neuromotoric expressions, which are ritual ceremonies. Thus, meta theology will open up the road to the final step of this journey, which is the acknowledgment of a "meg-atheology" founded on neurology. It will have such a universal dimension that it could be adopted by the majority of believers (d'Aquili & Newberg, 1999, pp. 195-203). This evolution (or involution, perhaps?) of thought of d'Aquili and Newberg in this final stage, will take the form of an initiation journey with pantheistic and neo syncretistic characteristics; to be proclaimed to the great public with an enthusiasm that emerges in the last chapter of *Why God...*, and to openly detach from the scientific method ("the mythology of science"), towards an adherence to an experience of an Absolute Unitary Being (Newberg, d'Aquili, & Rause, 2001, pp. 157-179). This work comes across as so apologetic and proselytizing, that even though it does not favor any particular institutional religion, its most passionate authors could very well be numbered among the category of "neuro apostles", as wittily proposed by Jean-Baptiste (2003)⁹

Underlining some exaggerated aspects of the theories of these two authors served to capture certain issues that could be relevant to the cooperation between neurobiology and psychology of religion. It also highlights how the scientific data coming through research observation can best be integrated within a design, a motivation, and a goal that are valid not only for neurology. One important conclusion that can be reached is that it is not only the interpretation that depends on a particular discipline and culture, but also the data collection and the adequate methodology, besides one's personal expectations and motivations.

For example, in the main research of d'Aquili and Newberg, to acknowledge that a group of Catholic nuns and Buddhist monks, while meditating, both exhibit a decrease of activity of the posterior superior parietal lobe of the brain, does not mean that this particular area of the brain is the "*locus*" for meditation, or that there is a specific structure in the brain which is ascribed to religion. In fact, even if one were to pursue this argument, the logic of research would require these preliminary verifications:

⁹ After all, the authors themselves present their theory as hypothetical, their language often in the conditional, and their convictions quite subjective and quasi "religious" ("We believe..."). They seem to be aware of the difficulties some of their statements have of being accepted by the scientific world, such as, "There's a sense of timelessness and infinity". In fact, their comment runs, "To the traditional scientific mind, of course, these terms are useless" (Newberg, d'Aquili, & Rause, 2001, p. 2).

a) that the concept of meditation is the same whether for Catholic nuns or for Buddhists, as for the researchers. This is to say that the researchers will have beforehand identified a nomothetic form of meditation that goes beyond a specific culture or religion.

b) That the neurobiological phenomena observed are to happen always and only in relation to the practice of meditation. This is to say that a specific neurobiological structure is directly related to the specific psychological activity of meditation, not only as a necessary condition but also as a sufficient one.

In case of the contrary, that is, failing to distinguish between neurological phenomena and psychic experiences, one risks falling into the conceptual confusion already seen in the past by renowned psychiatrists and neurologists, who confused religion with psychopathology, and some forms of epilepsy with mysticism. The fact that religion can be lived by disturbed people in line with their pathology¹⁰ has led some to see religion as a mere “pathology” in itself. The fact that the “sticky” personality of the epileptic could, in many cases, exhibit behavior that has a reference to God, has led some to hold that epileptics are more religious than the general population and that mystic experiences are a form of the pathology of the epileptic kind.

Epilepsy, temporal lobe, and religious experience. The research of Persinger¹¹

Amongst the latest, more refined versions, supported by experimental research, which attempt at establishing a connection between religious experience and temporal lobe epilepsy (TLE), is the stimulating work of Michael A. Persinger and his collaborators. Persinger, who is a neuropsychologist and who is the coordinator of the Behavioral Neuroscience Program at the Laurentian University of Sudbury in Canada, is convinced of the existence of a proven correlation between the signs of epilepsy (or even lability of the temporary lobe) on the one hand, and the religious and mystic experiences on the other. He has been researching on the subject for almost twenty years and this has found expression in the impressive number of publications.

The research model and the arguments that Persinger proposes move from one fundamental principle of behavioral neuroscience: that all experiences are generated by, (or correlated with) the cerebral activity. Therefore, every experience can be considered as a response to a corresponding stimulus. This means that if one were to isolate the appropriate stimulus, also the “God experience”¹² could be verified and reproduced in a laboratory (Persinger, 2003, p. 279).

The main thesis behind Persinger’s position is that “Religious and mystical experiences are *normal* consequences of spontaneous biogenic stimulation of the temporal lobe structures. The numbers, composition, and intensity of these experiences reflect a continuum of temporal lobe stability. Each human being may be located somewhere along this dimension” (Persinger, 1983, p. 1255).

In other words, Persinger makes the hypothesis that epilepsy is at the extreme end of a continuum in a general temporal lobe lability, along which one could place all human beings, in function of the frequency and intensity of the temporary lobe transients (Persinger, 1993; Persinger & Makarec, 1987, 1993).

¹⁰ Broadly speaking, I do not think that one could speak of a healthy religion and a sick one; or of a beneficial religion and a harmful one for mental health. Neither could one speak of religious coping, if not with reference to the subject and the use that the person makes of his religion. Cf. Aletti (2001; 2003b).

¹¹ Even though the authors do not say it explicitly, the type of epileptic manifestations described in this section are those which could be related to as a dysfunction of the middle temporal lobe.

¹² The warning given in note 4 is equally valid here. Expressions like “God experience”, “Mysticism”, “Sense of presence”, are reproduced in a way that bears the same meaning given by the authors, except for an accompanying critical discussion.

I will now try to synthesize the logic of the research and the argumentations which support such a thesis. Persinger's point of departure is the acknowledgment that inside the temporal lobe there are structures known as the amygdala and the hippocampus which, if stimulated, give rise to various mental phenomena. Persinger holds that also the general characteristics of religious experience reflect the actions of the diverse amygdaloid-hippocampal structures and the adjacent cortex. As it happens when unusual electrical activity opens up forgotten childhood memories, or experiences of distortions of space and time, or out-of-body experiences, so it is with the religious and mystical experiences. These are evoked by transient electrical microseizures within the deep structures of the temporal lobe (Persinger, 1984, 1987a).

The substantial homogeneity between religious experience and epilepsy is supported also by the results from questionnaires (*Personal Philosophy Inventory*, PPI) prepared for the scope of capturing significant correlations between frequently referred experiences by subjects with epileptic *foci* of the temporal lobe and mystical and paranormal experiences (Persinger & Makarec, 1987). In another research, the results from the same questionnaire have been correlated with another measurement of "epileptic" signs obtained by measuring the number of EEG spikes in subjects who had been exposed to intense and rapid sensorial stimuli of light and sound. The results show a significant correlation between the spikes in activity and the indexes of beliefs and dogma, mystical and paranormal experiences, and a sense of presence (Makarec & Persinger, 1985).

Moreover, using the transcranial magnetic stimulation (TMS) technique, but also by observing the influence of natural geomagnetic fields, Persinger found that the variations even of the low intensity magnetic fields could trigger "numinous" and "mystical" experiences in subjects with temporal lobe lability. This is to confirm that "the God experience is an artefact of transient changes in the temporal lobe" (Persinger, 1987b, p. 187; cf. also Persinger, 1983).

These transitory temporal lobe micro seizures could, according to Persinger, be understood as an adaptive response to existential traumatic situations in some kinds of anxiety in front of death. This explains the formation of a religious attitude in the individual, and in the human species, from an evolutionary perspective.

It is evident, at this point, that Persinger assumes: 1) That the epileptic crises, the out-of-body experiences, the *deja-vu* experiences, the distortions of space and time, as well as the "God experiences", are homogeneous and can be differentiated only by intensity and frequency of electrical crises. 2) That the psychological experiences can be considered equal if the observations of their neurobiological correlates are equal. 3) That the religious experience is the end product of an adaptive neurobiological process, generated basically by brain dysfunction, though a light one.

Referring to the possibility of inducing a "God experience", as mentioned above, Persinger claims to have shown on an experimental level that the application of weak magnetic fields through the brain hemispheres of normal subjects, induces an experience of "a sense of presence" of a living higher being. It is suggested that this experience is an emergence of the right hemisphere, which is equivalent to the sense of self of the left hemisphere, and which is the prototype of the God experience (Persinger, 2003).

It is worth noting that Persinger, in his more elaborate work on the subject *Neuropsychological bases of God beliefs* (1987b), makes it clear that God's experiences are not synonymous to epilepsies of the temporal lobe. Epileptic crises are exaggerated and disorganized forms of cerebral activity. Whereas, the God experience is a normal, more organized schema of activity of the temporal lobe, resulting from transient electrical micro seizures which can be induced also by intense emotional psychological stimuli, such as stress, the loss of a love object, or the fear of death.

By way of conclusion, for Persinger, religious experience, understood as a totally natural process similar to the act of perceiving a ghost and a poltergeist, is the result of the interaction between three components: 1) an external stimulus derived from some change in the natural magnetic field; 2) the effect of such stimulus on specific brain structures; 3) an interpretative

process of these forces through the usual psychological processes (Persinger, 2003; Persinger & Koren, 2001).

Some critical remarks

In comparison with the other preceding attempts to connect religious experience with epilepsy, Persinger's attempt is a step forward, as regards the refinement of the experimental research, and a greater prudence in interpreting data.

In the past, the equation between mysticism and epileptic pathology was very easily suggested. To refuse this identification of religion with pathology it is worth noting that the perceptive distortions and the hallucinations induced by epileptic conditions appear unstructured, fragmented and discrete. Whereas mystical experience enjoys a high level of sensory complexity, and it appears to the subject not as alien or not homogeneous when compared to the subject's other mental experiences. Moreover, on a methodological level, one could denounce the naivety and the lack of knowledge of an operation meant to trace back the connections between ecstatic and mystical experience (or other "special" forms of religion) and forms of brain dysfunctions; neuropathies or psychopathologies. This attempt, however, does not account for what happens in everyday religion, which could be defined as "normal", both on the phenomenological and on the statistical level.

However, the research of Persinger and his colleagues is liable to methodological criticism. In short, I would like to highlight that:

1). If the cerebral and psychological electromagnetic processes through which a religious perception is formed, are to be considered as *normal* (in the sense of being common to other perceptions), it does not emerge quite clearly how one could identify a single process on the mere neurological level, for a "God experience". If the process is a-specific, it remains without a name. However, the question still remains as to how to distinguish a religious experience from any other experience in general, and from any paranormal experience in particular, as well as from perceptions of living presences, or of ghosts. Once again, it is necessary to recall to culture, which specifies and which attributes meaning to that specific perception.

2). The phrase, "transient microseizures", is used at times with the connotation of natural or "normal" micro shocks (in the physiological not pathological sense), and at other times to indicate a light form of epileptic crisis. In this sense it would indicate a pathology or an abnormality of cerebral behavior. However, epilepsy is a definition of a clinical picture in which neurophysiological attributes are represented by a hypersynchronous activity of some cortical and subcortical structures. There is no such thing as a "healthy" or normal epilepsy, albeit a light one¹³. It looks quite evident that for Persinger, religious experience is a reaction to a state of cerebral and psychic discomfort and that, eventually, it belongs to pathology. The micro seizures at the origin are considered as a small epileptic attack (irrespective of what this expression could mean within a clinical perspective). From an evolutionary standpoint, then, the belief in God must have developed in the human species alongside the other cognitive functions, as an adaptation–defense against anxiety and self-destruction.

¹³ The term epilepsy does not refer to a specific pathology, but to a varied symptomatology, provoked by an abnormal, excessive and hypersynchronous cerebral electrical activity. The researchers referred to here are interested above all in the mesial temporal lobe epileptic seizures. Often, these are preceded by an "epileptic aura" and they are accompanied by a variety of symptoms. Amongst these, one should mention: *déjà-vu* experiences; a sense of estrangement and loss of reality contact; perceptual distortions of space and time (stillness of time and fixation in space); at times, depersonalization and derealization; double personality and auto observation. Several scholars from past centuries have seen in some of these symptoms a strong coincidence with (or a result of) presumed ecstatic and mystical experiences (after all, in remote times, epilepsy was considered as a "sacred sickness", whether divine or demonic). More recently, the fact that an epileptic fit can be artificially induced (kindling), has opened a vast area of research and discussion also on the relationship between epilepsy and religious experience.

3). It has been noticed (e.g. Watts, 2002b, p. 334) that in the PPI questionnaire constructed by Persinger to study the correlations between susceptibility to epilepsy and “mystical” or paranormal experience, or a sense of presence (Persinger & Makarec, 1987, 1993), the content of the items deemed as indicative of either one or the other condition show a degree of overlap. This, of course, makes a correlation between “epileptics” and “mystics” quite a strong one. Once again, this highlights the bearing that culture, and the preliminary definition of religion (and epilepsy) could have on one’s study.

4). Certain theoretical elaborations that Persinger intends to draw from his experimental data are a source of even more concern. He holds quite boldly that “There is now experimental evidence that the experience of God can be simulated with the laboratory” (Persinger, 2003, p. 292). This should happen through an artificial exposure, and/or the modification of the magnetic fields, with an opportune adaptation of the parameters in function of the individual variables of the different subjects. This “technical variation” would be analogous to the specific selection and dosage of an antidepressant for each individual patient).

More perplexing are the political implications and the future prospects. Since it has been demonstrated that the same structures and processes that evoke a God experience are also associated with sexual and aggressive behavior, beliefs in God could encourage aggression towards persons who do not share the same beliefs, particularly, if the subject has been sufficiently manipulated by instructions associated with God’s will. The believer so manipulated, could come to kill in the name of his God (Persinger, 1997). This is not done in function of some social learning or conditioning, but as a result of that close connection of cerebral processes that govern both religion and aggression.

By way of conclusion, Persinger holds that if on the one hand, the current scientific data on the origin of the belief in the existence of a supreme “Sentient Being”, creator and guarantor of personal immortality could render the God hypothesis useless, on the other hand, with the discovery of the influence of magnetic fields, a new sort of technology could have come into being, which could be developed and exploited by some dictatorial power to spread the “Sentient Being” experience. If this were to spread amongst vast populations without their awareness, then a powerful and terrible weapon is made available. This could be used both to induce a belief in God as well as to remove it. Such a control could prove to be “decisive for the survival of our species” (Persinger, 2003, p. 292). This apocalyptic vision brings to an end Persinger’s scientific parabola; a far cry from the scientific data drawn from his experiments.

Widening the vision: the issue of defining what is “religious”

The sequence between the neurobiological process and its more specific “religious” attribute through the use of language is still uncharted territory for Persinger. He is aware of the utmost importance of the linguistic processes, often relegated to the functions of the left hemisphere, for the creation of the self. However, he does not bring convincing proof about the emergence of a sense of presence of “Another”, compared to that of “others” (ranging from spirits, aliens, to poltergeists) as perceived by the subjects of his research. One could remark that this is not an important issue for him; that he does not acknowledge an ontological specificity for the “Sentient Being” perceived by his subjects. This, however, raises the problem of the language he uses, particularly of the expression “God experience” refers to.

The fact that the neurological processes are non-specific, shifts the problem of what is specifically “religious” to the fields of language and culture. The problem here is taking what is at the heart of the neurologists’ object of study, that is, of defining what is religion (and eventually, of what is spirituality). In other words, it is a question of distinguishing religious life from any other forms of life and making it a specific object of one’s studies.

Some scholars hold that the issue could be bypassed, with sure benefit for scientific investigation, by adopting what the cognitive neurosciences of religion suggest, that is, precisely bypassing the issue of defining “religious experience”, and experience tout-court, to focus the

attention on phenomena. These are more easily identifiable as scientific objects, as with “basic components of religious cognition”, which can more plausibly be located in the frontal lobes, as is the case with the concept of agent and theory of the mind, the transmission and the crystallization of beliefs, the counterintuitive phenomena, etc. (McNamara, 2001).

In reality, I believe that what we see here is the old problem that assails the psychology of religion; that of choosing between a substantial or a functional definition of religion, as lived by the subject. In other words, the dilemma between what it is and what it serves. If one were to take into consideration that the specificity of religion is not given from its function but lies in the lived (subjective) relationship with the Transcendent, then religious experience presupposes the subject’s psychology, his personal history, the kind of religion to which he refers, and the surrounding culture.

For instance, the so-called altered states of consciousness (or rather, diverse states), inasmuch as they are concomitant with religious phenomena and with physiological changes, even though they are observed during a deep meditation (Pelizzoni, 1999) they are no proof of the presence of religiosity, if not in relation to the subject who wishes to give them religious meanings. In this way, electroneurophysiological studies conducted on visionaries while claiming to be in the presence of the Madonna are no proof of a real apparition. Rather, it is a perception of the vision by the subjects and the corresponding tendency to give a religious meaning to such perceptual phenomena (Cf. Magnani, 2005; Margnelli & Gagliardi, 1994, 1999).

An interesting example in this regard is that of the “Near-Death Experiences” (NDE). There is a vast literature on the subject coming from a para-scientific field and which has made a considerable impression on public opinion due to both the countless cases described, and to the claim that this is a proof of the existence of the other worldly (Fenwick & Fenwick, 1995; Moody, 1975, 1977; Ring, 1980).

As a first reaction, it is worth noting that NDE are never experiences of the other world. If one were to consider the other world as that which exists beyond, precisely beyond the point of no return, than means in the first place that the near-death experience tells us nothing about that which happens after death. This is what a certain sub-culture, like the new age, pretends; and what parapsychologists like Moody, the first one to coin the term “near-death experiences” starting from the seventies and eighties of the previous century, assert; as well as what some researchers like Peter Fenwick claim¹⁴.

A perception of something beyond the sensory is a logical contradiction. Much more likely is the hypothesis that the neurobiological and neurochemical phenomena which take place during, or at the moment of exit (fragmented and gradual) from a comatose state or a state of diminished consciousness (caused by traumatic events, surgical operations, oxygen deprivation) are described and interpreted later in the function of one’s own personality and contextual reference. Often these are conveyed through suggestive descriptions and metaphors. In my opinion, the perceptual experiences as initially described by Moody (1975; 1977) by the 15 characteristics, and later reduced to 5 by Kenneth Ring (1980) can be related to these. The five characteristics are: the sense of relaxation; the sensation of being outside one’s body; the feeling of going through a dark tunnel and the perception of a strong light at the end of the tunnel; the feeling of being immersed in this beneficial light.

Personally, having gone through a five-year-long research on the experiences of patients who had come out of Intensive Care, I had the opportunity to study descriptions of similar phenomena. Of these, only some isolated cases and linked to the presence of some kind of iconographic reference related to the person’s life, could be taken as religious descriptions. Oddly enough, this was never the case with religious patients, such as priests and nuns (Aletti et al., 1990; Aletti,

¹⁴ Moody however, has more recently clarified his position that the near-death experiences cannot be taken as proofs of the existence of another life beyond this world. The accounts of the subjects studied by him refer to a real experience but certainly not to a real death. The contrary position supported by previous publications could have been the fruit of manipulations by publishers for commercial purposes (sic! cf., Moody, 1999).

Maretti, Gola, Di Summa, & Gamba, 1992; Maretti et al., 1990). As for the influence of cultural symbolism on such visions, one need only think of the popular traditional iconography of the light, seen as goodness, salvation, or even as God. Surely, certain representations can be derived also from theological constructs. Whatever the case, it is culture that confers meaning to the data of mere sensorial perception. The success of NDE in their popularity thanks to the mass media, the new-age sub-culture; the ambivalent embracement by Protestant, Evangelical and Mormon groups (but also by Charismatics, both Protestant and Catholic) represent a typical case of a social reconstruction of beliefs (Introvigne, 1996)¹⁵.

Conclusions: open issues and critical information

Critical points

1) A general premise and a basic point, is none other than the application of the oldest and most fundamental methodological principle; the exclusion of the Transcendent both as an object of inquiry (Flournoy, 1902, 1903, 1910), and as a criterion for interpreting psychological observations (Aletti, 1992, 2003a). The fact that religious experience has neurological correlates (in this sense, it is certainly “real”) can never be taken as proof (for, or against) of whether God truly exists or not. In this sense, all psychological experience, even the delirious, is real. Certainly, any psychological experience, including the theoretical endeavor of upholding the opinion that God does not exist, has its neurological correlates. Should we, therefore, speak of an “atheistic experience”? The neurological discourse cannot witness the existence, or the nonexistence of God anywhere else than in our mind: not God, but the “thought of God” is present in our brain (more generally, as far as the psychologist can say, God is present as a psychic reference not as an ontological reality). As to the real existence of God, a reductive or apologetic discourse is usually supported by controversial issues which have nothing to do with psychological scientific observation. As a matter of fact, to uphold that God is inside the brain is an argument that is used both to support religious adherence and its refusal, as it is the case with the “neuro apostles”, or “God’s biologists” (Jean-Baptiste, 2003).

2) No religious experience, not even the mystical experience, is strictly an im-mediate one, either from the cultural perspective or from a neurological one. Even “mystical” experiences of the absolute; those of a fusion with everything, and with an “Absolute Unitary Being”; those of “sensory deprivation”; or those of a “felt presence”, are always rooted in neurobiology as well as in a determined culture. There is no such thing as human experience which is u-topical or a-chronicle, outside the surrounding socio-cultural context. Religious experiences are not immediate, not even from a neurological perspective. Religious experiences pass through our body and are neurobiologically conditioned by our brain and by its actual state. This is to say, the brain’s history and its life experiences which have characterized the evolution of that particular individual and of the entire species.

On the other hand, religious experiences are mediated not only by the sociocultural environment but also by the person’s individual history. Starting from the practice of “name giving”, that is, the conceptualizing and symbolizing experiences, which is certainly an idiosyncratic one, and moving to the level of stable negotiations within social interaction, the two dimensions work together.

¹⁵ The social dimension of the construction of beliefs is inherent in the institutionalization of religion. This phenomenon is considered as anomalous mostly when highlighting its spontaneous and unharmonious growth under the pressure of a mass belief. One could find some examples within Catholic circles, particularly in the numerous centers erected on presumed apparitions of the Madonna (Apolito, 2002; Magnani, 2005); or the sudden “ex nihilo” creation of new saints based on popular impulse, as is the case which has spread throughout the whole of Brazil over the span of very few years, of the cult of St. Expeditus; and the related tale of its origins, starting from 1998, as documented by Monique Augras (2001).

It is useful to distinguish between what happens on the brain level and what happens on the psychic level. Many misunderstandings in this sector come from a coarse presumption that the human psyche functions like a computer and that the brain is to the mind as the hardware is to the software. But the computer elaborates through merely syntax operations, combining formal symbols on the basis of pre-established rules of the mind with human creativity. The computational model of the mind ends up in a tautologous circle. The human mind thus appears, both to external observation, and to the subject's immediate evidence, as the site for autonomous and creative functioning; of semantic contents enriched with intentionality. Perception is not only a neurological fact, but it is also a psychological one, resulting in an interaction of situational and (pre) dispositional factors; the two residing in the body. The situational (cultural) factors are intertwined with the dispositional ("predispositions") ones in the subject's construction of meaning which orientate the same subject to the perception of the sensory stimulus. It is not only the case of the whole being greater than the sum total of the parts, but that the global apperception orientates the sensory perceptions attributing them also with emotions. A symphony can be transcribed in terms of physical sound vibrations inasmuch as it is an assembly of sounds. But this is not the symphony that moves me; nor is it the symphony that I "hear". When I listen, it is not my ear, the organ responsible for hearing, that hears but it is "me", my whole person who is listening.

3) Consequently, observations that are taken out of their cultural context and outside their linguistic references, or which are gathered using methodologies and experimental situations which, by definition, are out of context, end up being quite problematic when it comes to describing the lived religious experience. They do not draw out the motivations, needs, and intentions, which are the processes at the origin of the religious experience, which are on their part contextualized within a specific culture, and which adopt its language and symbols. The same thing could be said, and with even greater force, of all the research conducted on subjects with pathological and/or traumatic features; on studies focused on particular states of consciousness, or on conditions of an exceptional religious experience, such as meditation, mystical ecstasy, experiences of encounters with a "Higher Being", etc.

4) In relation with what was said above, there remains the problem of the a-specificity (a-religiousness) of the neurological correlates of religious experience. It is not possible to identify a specific cerebral process as a "religious experience". This conviction comes from certain issues that neurological research has left unsolved. In particular, there lies the question of how does the passage from the a-specific structure of neurological processes to the specificity of "religious" attitudes take place?¹⁶ In other words, what makes an attitude a religious one? What is the "religious" specificity of a religious attitude? The definition comes from culture, and from the person. It is not inscribed in the neurological components. That which makes it possible to identify a cerebral process as a cerebral correlate of an "experience of God", or as a "mystical" experience, is a psychological experience to be attributed to the person and to the culture (theological culture included) in which the person lives this experience. The question is not a matter of content only, but of method as well. If the identification of what is considered as religious experience, or mystical experience, or ecstasy or the sense of God's presence requires the surrounding culture, then for the neurological researcher theology and personal history become a problem related to the commensurability between the object and the instruments of the study. For instance, what is it that the brain scanning techniques actually observe and measure? They will have to research an object which is defined by culture and by the subject's psychological attitude, not by neurobiology. To study what happens inside the brain "when" the subject goes through a religious experience supposes that credit is to be given to psychology which, prior to and independently of, has indicated a specific psychological attitude as an object of study.

¹⁶ The same term "religious experience" and the more generic one, "religious" which I have used and which was taken from the authors to discuss several positions, appears to me as an ambiguous one. The concept "religious attitude", which is a better defined one by more objective parameters, makes reference to a neurological condition, both as a mental disposition, and as external manifestations with a resultant intentional behavior.

In the same way, the neurological perspective by itself cannot explain the quality and level of a religious experience. For example, it cannot account for the personal connotation that the symbol “God Father” acquires for the individual, in the function of the personal experience of a real and a symbolic father images encountered in the course of one’s personal history. Similarly, it cannot fathom the characteristics of the attitudes of an individual religion as lived within an institutional religious denomination (e.g. Orthodoxy *versus* Fundamentalism). Such characteristics necessarily refer both to the psychological dimensions of the personality and to the theological frame of reference (Aletti, 2003a).

5) It seems that greater attention needs to be given to the coherence between the data collected by neurological research and the theoretical constructs to be applied. Some researchers, not accidentally defined ironically as “neuroapostles” or “biologists of God” (Jean-Baptiste, 2003), for the passion with which they design and popularize their systems, seem at times to move away from scientific research criteria by drawing conclusions and generalizations from their neurological data. When these are in fact ever more limited and fragmented, they envisage synthetic, widely comprehensive and widely explicatory models of the whole mental functioning, if not of the mechanisms of belief as well. It needs to be underlined that some of these models have encountered a generalized lack of trust by the same members of the neurological disciplines. In fact, very often, for those authors who willingly connect neurological data and general anthropological perspectives, their type of model of brain functioning is considered as unjustified and their synthetic view as ideological. Formulas like, “Absolute Unitary Being”, “Megatheology”, “Theobiology”, “Biotheology”, overshadow concepts which on the one hand, no theologian would acknowledge as theologically proper, and on the other hand, have had a limited impact, if any, on the general neurological literature. The scarce confrontation with publications and models of their colleagues is observed also at the level of those researchers interested in the neurobiology of religious behavior. To cite one example, d’Aquili and Newberg vigorously deny that mystical experience is to be considered as homogenous with epileptic forms. However, this assumption is at the basis of Persinger’s research and theory.

6) As is often the case, also in this field, psychology of religion is exposed to the risk of ideological interpretations. Some neurologists who uphold that the foundation of the God experience is in the brain, seem to pursue an apologetic justification of faith. But it is evident that the paradox of these constructions which see religion rooted in the biological, is that they want to found its universality and necessity “scientifically”. However, what is universal is not religion but its neurological substratum. At times, the argumentation is presented in the perspective of evolutionary psychology which applies Darwinism to the evolution of the brain in the human species. The “evolutionary” necessity of a base religiosity, which is innate and precedes any culture and education, could be demonstrated by the constant permanence of religiosity, though in its multiple cultural forms, in the human species (Newberg, d’Aquili, & Rause, 2001). For others, it falls within the more general design for which the brain evolution (“transmitter to God”) requires a progression towards the divinity and the same divinization of humankind (Joseph, 2001).

The bewildered reader would agree that it is not insignificant that some authors behind these theories (and the circles of people who subscribe to them) are personally involved in some form of religious belonging (from the multiple forms of Christianity, to the so called “Raelian religion” which connects the origin of the human species on earth to extraterrestrial people). The fact that the authors are neurobiologists, neuropsychiatrists or neuropsychologists, at times with an experience in scientific research, does not constitute a guarantee of trustworthiness in what they claim in a theological perspective. By the same token, such credibility is not present even in a psychological perspective or in that of neurology either. Personal involvement often directs the reflections to goals that go well beyond the data and results of the same scientific research. What is reflected here is the tendency to twin theology and science to an apologetic function. This is typically present in Anglo-Saxon Protestant circles and particularly in those in North America. This finds its expression also in Faculties and Departments of Theology, such as, in the chairs of *Theology and Science*. This is not

to say that such a twinning is an illegitimate one. However, there are doubts as to its usefulness in the progress of a psychological understanding of religion.

Perspectives and Proposals. Psychology of religion between neurobiology and cultural psychology

The question that is raised at the end of this review is to what extent has neurobiology to do with a *psychological* interpretation of religion. Is neurobiological knowledge opportune? Is it necessary? Is it sufficient, as the reductive approach “at the bottom” seems to suggest? Such issues boil down to the method, the object, and to that which is specific in psychological research.

That the neurobiological dimension is a constitutive element in the real psychic life of the believer is quite obvious. We are (also) our body, and our mind is (also) our brain. But the question is directed at the level of each discipline and their respective contribution. My argument is that by focusing on a complementary neurobiological approach (which aims at non-specific structures underlying individual religiosity) and on a personal and cultural approach (which underlines the diversity of concrete realities), allows for a better identification of the constant and changing psychological variables of religious behavior. I believe that psychologists should safeguard the uniqueness and peculiarity of the psychological approach, though within a multidisciplinary and multilevel perspective of the study of religion. It should also conform to that integrative pattern as suggested by Paloutzian and Park (2005a).

The psychology of religion does not profit much in terms of progress when it learns from neurobiology that the religious or mystical attitude has always a neurological counterpart. There is nothing to wonder about that, as for every mental activity there is a correspondent brain activity; and the more complex and refined the former, the more differentiated and specific is the latter. Rather, one would be surprised if it were the contrary. The human person is a synergy of mind and body; of biology and culture; and of ontogenetic originality and phylogenetic evolution. What is then the use of neurobiological inquiry for the psychology of religion? What other knowledge does it contribute that psychology does not already possess through its own instruments of inquiry?

It would be an interesting contribution if one could demonstrate that to a well-qualified religious activity (e.g. meditation) there is a corresponding well differentiated neurological activity, distinguishable from other forms of religious practices, and from other modes of meditation. If one were to find differences that are psychologically relevant, and which can be referred to the diverse religious-cultural context, for example, within a generic activity of meditation this would enable the study of psychological constants and variables of religious attitudes.

Along the same lines, to connect the different forms of manifest religious behavior to the general framework of a well-founded neurobiological “spirituality” does not seem to me to contribute a lot to psychological research. Unless, of course, one were to take this spirituality to a wider and broader level, and connect it to man’s capacity to read meaningful symbols in an existential dimension. But this is to say to live as a human being. This, however, risks also falling into that generalization of fusing together religion, spirituality and personal development into that “dark night in which all the cows are black” (Hegel). In my view, the research on “religious experience”, “ecstasy”, “mysticism” and “spirituality” is exposed to this risk if one were to define such concepts at a pre-cultural level, as if it were an innate thing or something neurologically defined.

Similarly, the so called “cognitive sciences” are exposed to the same risk when they seek to single out a common general characteristic for the diverse religions by imposing their own interpretation to the concepts used. Pascal Boyer (1994) identifies this in what he calls “cognitive constraints”, which contrasts with what he calls “natural ontologies”. Others opt more forcefully for the concept of “counter-intuitive thinking” (Pyysiäinen, 2003; Pyysiäinen, Lindeman, & Honkela, 2003). In spite of the contradictions with logical evidence and “natural” thinking (God is a “person”, but without a body; the dead live another life...) this is supposed to characterize that

attitude towards the “super-natural”. Counter-intuitiveness,¹⁷ for these authors, is a mode of thinking which goes against implicit knowledge and intuition of reality. Besides, it seems that it is a necessary characteristic of religious thought, or of the supernatural, to harbor such conceptual difficulties and contradictions. (Someone even commented that it is impossible to conduct an empirical study of a thing which is “above” observable nature). The use of the counter-intuitiveness category results in a step forward in the overcoming of the neurobiological reductionism. This is so because it gives greater relevance to the psychological, particularly, in the formulations in which the emphasis on the cognitive is bypassed and concepts are better conveyed by emotions and by religious sentiments (Pyysiäinen, 2001; 2003, pp.77-142). Counter-intuitiveness could offer useful indications to the study of religion. However, though counter-intuitive thinking is a necessary characteristic it is not a sufficient one for religion, as the same Ilkka Pyysiäinen (2003, p. 235) acknowledges. In reality, I believe it characterizes a good part of the non denotative human language, such as that of poetry or art in general, that of erotic experience, etc. Generally speaking, from a methodological perspective, the characteristic of counter-intuitiveness is to be rethought and confronted with the more usual forms, such as analogy, metaphor, symbolism, etc. (cf. Fagnani & Rossi, 1998).¹⁸

However, as already mentioned, the wish to elaborate formulations of a “universal” value for all religions risks shifting the attention away from the psychological dimensions always present or “embedded” in a culture. The formulations of the cognitive sciences of religion that aspire to study religiosity apart from any confession, and perhaps, apart from any culture, thinking that in this way they can make their studies more generalized, pay the price in terms of cultural asepticity or irrelevance. The concepts of “agent” and “agency”, for example, seem to ignore that in the religious tradition, at least in the west, the “real” religion as lived by people through the institutions, both in the private forms, and in the common public manifestations, speaks of God as a transcendent person, and that the relationship with God is seen as an interpersonal relationship. Naturally, the issue of the truth about the ontological object of these beliefs is another matter. This question is not the competence of psychology of religion.

If the neurobiological structures are a-religious, then there is a need for another criterion to define the “religious”: the cultural criterion and the psychological criterion. Whatever the case, one needs something “other” than neurobiology and its universal mechanisms of the mind. From this point of view, the non specific and merely neurobiological cannot explain that which has ultimate concern, which is the characteristic of religion as lived by the believer. I believe that to define the religiosity of the individual, or mystical experience, one cannot ignore its reference to *transcendence* and to *awareness*. The (subjective) awareness of one’s own adherence to the Transcendent is a component of religion. In the west it is something experienced in the common and immediate awareness of the believer as it is expressed by culture. The neurobiological correlates do not explain the intentional dimension of a mental activity. Specifically, they do not comply with the typically human effort to “search for meaning”, which is at the basis of the mythical and poetic activity of the human being, alongside his religiosity (Aletti, 1992; Milanesi & Aletti, 1973). The religious attitude needs an intentional relationship of the subject with that which is perceived as ontologically transcendent and as a source of meaning for one’s own existential

¹⁷ In Italian the translation “controintuitività” is an ugly term. This often happens when English terminology is inserted into the Italian psychological language.

¹⁸ The same definition of counter-intuitiveness seems to rely too univocally on the rational content of thought, as if the symbolic expression which is evoked and invoked, is nothing but an unworthy distortion and not, for example, its original matrix. For example, the scribbling of a child is not the rough transcription or imperfect imitation of the neat handwriting of the adult. It holds also the possibility of an “adult” transcription, and the possibility of its development into an artistic form of expression, “other” than the rational and verbal. In the human being, the verbal is rooted in the pre-verbal. In this way, the scribbling contains possibilities that evolve with education which channels them (and limits them), and guides them through the cultural transmission and the linguistic task. It is against this background that one is to read certain definitions of religious thinking which would reduce it to a purely natural and “intuitive” thing (Guthrie, 2001).

orientation. For this reason, there is neither a religion of the neurons, nor of the brain. To maintain the contrary would mean, among other things, that all human beings are religious. This does not render justice to the atheist attitude, that is, the refusal of God, which is psychologically rooted (and by necessity also neurologically).

The importance of awareness for the religious attitude could perhaps be better explained by the following example. What characterizes the walking in a procession towards a sanctuary as a religious gesture, from a simple walk is not to be found in the brain's structure and neurophysiological processes, but in the person's intention and in the meaning that the person and the surrounding culture attribute to that gesture. The intention that the psychologist seeks inside the mind of the "religious" subject has to deal with the intention that is drawn from that particular religion, and it certainly cannot be ignored.

This indispensable anchorage of individual religious experience onto a determined formulation offered by culture opens up to that necessary dialogue with theology, or theologies, and also helps in the identification of the object of study of psychology of religion. Religious experience, mysticism and ecstasy are de-fined concepts (Latin, *fines*; limited) both from a diachronic and from a synchronic perspective. Therefore, they can be made operational only with reference to the cultural *humus* within which they are taken. For this reason, Theology, understood as that knowledge that makes explicit the conscious experience of the believer, ought to be listened to as guarantor to that link between individual religious experience and the cultural-institutional expression to which it refers. Theology is worthy of more attention when, while it condemns that claim coming from the field of natural-scientific knowledge that it can be an anthropologically normative and binding structure, it upholds that human spirituality as it is lived in the common practice, cannot be conditioned by other factors in its exercise. In other words, it suggests some methodological considerations when it takes cognizance of what is found in contemporary literature, and what is present in popular hearsay that often, "the evidence of natural conditionings in the exercise of that spiritual quality opens [...] the way to the acknowledgment of the primacy of those conditionings which are organically given and artificially predisposed" (Sequeri, 2003, p. 67).

It is worth remembering one more time here, and as Karl Popper teaches us, that the method chosen singles out the scientific object, not only in the creation of a theory but also in the simple task of identifying an element of research as "scientific" data in function of one's intention to know more. From here comes the necessity to distinguish the different levels of knowledge of a phenomenon, in the function of the (implicit) complexity level desired by one's intentionality for knowledge.

From their side, psychologists demand that they be able to integrate neurological knowledge, often discrete and fragmented, in a coherent framework of psychological meaning. This is not because of a bad reputation that they intend to contrast the neurologists' data and accurate descriptions with woolly psychological explanations. But because they intend to take into consideration a wider and more comprehensive explanation and raise it to a different level which can be anchored to the individual's more complex psyche as it interacts also with other subjects within that culture.

Neuropsychology, between Occam's razor and Origen's knife

Neurobiologists and neuropsychologists, in their attempt to explain psychic processes with experimental observations, often formulate notions and concepts which, if inferred from some forgone bias of the standpoint adopted, risk falling into a reductionism that nullifies the same specificity of the psychic facts. They think of using Occam's razor but actually end up using the self-destructive knife of Origen, the Father of the Church, who castrated himself to get rid of sexual temptations.

The limits of the neurological prospective are well denounced by a sharp neurologist such as Oliver Sacks, in his autobiographical testimony in, *A leg to stand on*. It is a fascinating exploration of the physical basis of personal identity. He maintains that "Neuropsychology, though worthy of

admiration, excludes the psyche. Like classical neurology, neuropsychology aims to be completely objective, and that it is precisely through this that it gains its force and progress. As a living creature, the human being in particular, is by nature an acting subject, not an object. It is precisely this subject, this “living I” which is not taken into consideration (Sacks, 1984/1996, p. 207, *my translation from the Italian*).

Since the brain is not similar enough to a human being, as we read repeatedly in the so called “Second Wittgenstein”, that is the *Philosophical Investigations*. At a moment when academic psychology is shifting towards neurology, it is worth reading and paying particular attention to *Remarks on the Philosophy of Psychology* (Wittgenstein, 1980). In this work he highlights “the feeling of an unbridgeable gulf between conscience and brain process” (Wittgenstein, 1953, P. 412, p. 124e).

Safeguarding the specificity of the approach. The psychoanalytic example

I believe that, as is the case with the psychological approach, so also in the specific field of psychology of religion, it is worth safeguarding its peculiarity of putting at the center the subject, understood as a person; the agent of the psychic activity; the Ego-Self, or whatever one wants to call it, the “proprium”, which represents the complexity and wholeness of the human subject, together with its own idiosyncraticity.¹⁹

It is easier for me, maybe because of my familiarity with the clinical practice, to express myself with an example taken from the psychoanalytic approach. Like no other branch in the psychology, psychoanalysis acknowledges the complexity of the network and the interactions between body-brain-mind (just think of the concept of “drive”).

It is a known fact that it is a common trend today to seek a relationship between psychoanalytic givens and neurophysiological correlates, if not also to integrate psychoanalysis with the neurosciences.²⁰ It is quite significant that the majority of these proposals, at least in Europe, do not come from psychoanalysts (theoreticians and clinicians). The advocates of the integration between psychoanalysis and neurosciences or the supporters of the so called “neuropsychanalysis”, such as Mark Solms (cf. Kaplan-Solms & Solms, 2000; Solms & Turnbull, 2002) and Arnold H. Modell (1993) are only a few.

It is true that Freud himself, in *Project for a Scientific Psychology* (1895) proposed a representation of the psychic processes in terms of neurophysiological states, that is, of material cells that could be identified. But the attempt, which was not published, was soon abandoned by Freud and he would later on take a definite stand away from it.²¹ It is in this sense that one is to interpret his desire to ban doctors from psychoanalysis, not because they are doctors, but inasmuch as they carry with them a mentality and an approach which is different and distant from the psychological one:

¹⁹ It is not my intention to engage in a debate between the various theories of personality, but merely to offer an example of the different levels of complexity with which the psychological and the neurological model will have to contend.

²⁰ It is enough to browse through some bibliographies (in Italian, cf. Tramonti, 2003) which total to more than 1500 titles. For an introduction to the different models of the relationship between body-brain-mind and the relationship with psychoanalysis see Maggioni (1998), and Curatola (2002). For a more general approach see the documented introductions by Alessandro Antonietti (1999; 2001) and the essay by the same author in this volume.

²¹ Solms holds that Freud’s transitional moment between neurology and psychoanalysis, starting from 1890, was motivated by the primitive knowledge regarding neurology (Solms & Saling, 1990). This argument does not take adequately into consideration his convictions regarding the specificity and the non fragmentation of the psychic. This transpires from the many theoretical and clinical writings, and in the numerous letters. Worth noting is also the scarce interest for the issue of the material support of the psychic apparatus. To the hypothetical person with whom he is talking in *The question of lay analysis*, he reiterates: “It will soon be clear what the mental apparatus is, but I must beg you not to ask what material it is constructed of. That is not a subject of psychological interest. Psychology can be as indifferent to it as, for instance, optics can be to the question of whether the walls of a telescope are made of metal or cardboard” (Freud, 1926b, p. 194).

We have a right to demand, however, that they should not mistake their preliminary education for a complete training, that they should overcome the one-sidedness that is fostered by instruction in medical schools and that they should resist the temptation to flirt with endocrinology and the autonomic nervous system, when what is needed is an apprehension of psychological facts with the help of a framework of psychological concepts (Freud, 1927a, p. 257).

The idea is taken up again and put into a more interesting context in a letter to the Pastor Pfister of the 25th November 1928:

I do not know if you have detected the secret link between the *Lay Analysis* and the *Illusion*. In the former I wish to protect analysis from the doctors and in the latter from the priests. I should like to hand it over to a profession which does not yet exist, a profession of lay curers of souls who need not be doctors and should not be priests (Freud, 1963a, p. 126).

Psychoanalysis is a functional and temporary relationship established by an exchange of words, within a special setting, and pregnant with affects (transference and countertransference). Although such definition requires further clarification, it is enough to highlight an essential element: that psychoanalysis is positioned at the level of interaction between language and affect (cf. Aletti, 1998, pp. 18-26).

It is evident that every relational experience, like every other psychic experience, necessarily has some corresponding factors on the brain level. There is no doubt that without the neurological structures (or without a body), neither verbal exchange, nor affective interplay is possible. For the same reason, the possibility of a transference relationship is also excluded. However, psychoanalysis is positioned at the end side of a long and complex human experience. While engaging in a verbal exchange, it does not stop at any of the many levels possible and at any of the different points of view which can be adopted to understand the relationship which is thereby established. Rather, while being interested in its semantics and syntax, psychoanalysis takes it more as a whole rather than getting involved in its conditions and functions. Otherwise, ironically, we have to remind ourselves, that before the neural processes are activated, in order for a person to speak, it is necessary that first that person be alive and breathing. Using the same analogy, is not our capacity for mental activity, for thinking, for loving, and for praying also subject to our blood glucose level? Yet, no one dreams of saying that psychoanalysis is a field open to the lung specialist or the diabetes expert respectively. On the contrary, a concentration on such vital details, would not allow one to capture the proprium of psychoanalytic research. Could it be the same thing when it comes to neurology with regards to psychology, and of psychology of religion in particular? Or is it something special since it is closer to the mind? If that were the case, why not get interested in neurochemistry, in neurotransmitters, and in synaptic processes?²²

In other words, what is the unifying a-tomic (from the Greek: “un-divisible”) element of our psychological study in this regression from the complex and global, to the more simple and particular, if it still merits to be considered as an inquiry in the psychology (of religion)?

The fact that the psychological act could be observed from multiple and different levels of complexity, does not compromise the specificity of the psychological act as a human act. I believe it is important to take up again the concept of person, which in our culture, can be attributed both to man and to God.²³ For instance, for a section of contemporary psychoanalysis, the person is a total synthesis of the self and the ego; the individual in its complexity; a mature synthesis of individuality and universality. This is the case of the work of Davide Lopez (Lopez, 1983; Lopez & Zorzi, 1990; Lopez & Zorzi Meneguzzo, 1989), for whom the concept of person is somewhat closer

²² At the end, would not psychology be nothing else but chemistry or physics, according to the great reductivistic project taken up by physicalists like Rudolf Carnap (1931), for whom any psychological theory could be formulated in a physicalist language, and all the theories of psychology speak only of physicalist events, that is, physical behaviour?

²³ Both references are considered by psychology of religion not in a theological perspective (such as, for example, in Russell et al., 2002; Watts, 2002a) but in a psychological perspective.

to that of the *self-object* of Kohut, but highlights the importance of the “relational tension” in the building up and maintenance of maturity. The use of the concept of the person as referring to the subject – today somewhat alien to academic psychology – would seem to be justified by a two-thousand-year-old philosophical and religious tradition in the Western world.

Certainly using anthropomorphic and analogous language, which is an essential method in religious language, this same tradition has identified God as a person. To free themselves from any form of patronizing culture, and in search of an all-encompassing category applicable to the concept of divinity in all cultures, some anthropologists and phenomenologists of the cognitive approach, suggest a more neutral term such as “agent”, “agency” to refer to the supernatural.

However, it is difficult for psychologists to accept such a de-culturalization of the concept of the transcendent. The psyche is a function of the relation between our neurobiological organism and culture. Psychology does not acknowledge any other God other than that “spoken” of by the subject in a determined culture. Giving a name to God takes place in a symbolic context full of signs, meanings, words and people who speak words. This is not only the case of psychoanalysis, which is highly idiosyncratic, but also of any psychological approach. For instance, in the cognitive perspective of the social “schema”, great attention is given to the “social construction of God”²⁴ (Arbib, 1999; Arbib & Hesse, 1986). Certainly, the two authors quoted are aware of the issue of whether the “reality” of God is an external reality and an assembly of social constructions, or on the contrary, if “God” is *only* a social construct it cannot be solved by the psychology of religion. Far less, it does not even belong to it.

(Translated by Paul Galea)

References

- Aletti, M. (1992). *Psicologia, psicoanalisi e religione. Studi e ricerche*. Bologna: Dehoniane.
- Aletti, M. (1998). Per una lettura psicoanalitica del simbolo religioso. In D. Fagnani & M. T. Rossi (Eds.), *Simbolo, metafora, invocazione tra religione e psicoanalisi* (pp. 13-45). Bergamo: Moretti & Vitali.
- Aletti, M. (2001). Religione, *coping* e psicoanalisi. Dalla rappresentazione psichica all'atteggiamento personale verso Dio. In M. Aletti & G. Rossi (Eds.), *L'illusione religiosa: rive e derive* (pp. 59-68). Torino: Centro Scientifico Editore.
- Aletti, M. (2002). La religione come illusione: modelli, prospettive e problemi per una lettura psicoanalitica. In M. Aletti & F. De Nardi (Eds.), *Psicoanalisi e religione: nuove prospettive clinico-ermeneutiche* (pp. 59-89). Torino: Centro Scientifico Editore.
- Aletti, M. (2003a). Psicologia, teologia, psicologia della religione. Alcuni snodi attuali di un rapporto complesso. *Teologia. Rivista della Facoltà Teologica dell'Italia Settentrionale*, 28, 254-286.
- Aletti, M. (2003b). Religion, coping and psychoanalysis: a preliminary discussion. *DIPAV Quaderni. Quadrimestrale di psicologia e antropologia culturale*, 6, 143-158.
- Aletti, M. (2005). Religion as an illusion: prospects for and problems with a psychoanalytical model. *Archiv für Religionspsychologie/Archive for the Psychology of Religion*, 27, 1-18.
- Aletti, M., Maretti, D., Gamba, A., Bobbio Pallavicini, F., Verona, L., & Chiaranda, M. (1990). Studio sullo stress psicofisico da ricovero nel Reparto di Terapia Intensiva. I: finalità e metodi delle indagini. *Minerva Anestesiologica*, 56, 1197-1199.
- Aletti, M., Maretti, D., Gola, I., Di Summa, G., & Gamba, A. (1992). Stress ed impatto ambientale in terapia intensiva. *Rivista Medica Italiana di Psicoterapia ed Ipnosi*, 4(2), 189-194.

²⁴ The cognitive theory of the social schema highlights the social influences on the brain structures and functioning. It seeks to understand how the social schemas emerging from collective behavioral patterns in a particular society, provide an “external” reality, from which a person acquires a schema in one’s mind.

- Andresen, J. (Ed.). (2001). *Religion in mind: Cognitive perspectives on religious belief, ritual, and experience*. Cambridge: Cambridge University Press.
- Antonietti, A. (1999). *Il luogo della mente. Un'introduzione alla psicologia attraverso il mind-body problem* (3. ed.). Milano: Franco Angeli.
- Antonietti, A. (2001). *Invito alla psicologia. Che cos'è e come si studia*. Roma: Carocci.
- Apolito, P. (2002). *Internet e la Madonna. Sul visionarismo religioso in Rete*. Milano: Feltrinelli.
- Arbib, M. E. (1999). Crusoe's brain: of solitude and society. In R. J. Russel, J. G. Murphy, T. C. Meyering & M. E. Arbib (Eds.), *Neuroscience and the person. Scientific perspectives on divine action* (pp. 419-448). Vatican City State: Vatican Observatory Publications / Berkeley, CA: Center for Theology and the Natural Sciences.
- Arbib, M. E., & Hesse, M. B. (1986). *The construction of reality*. Cambridge: Cambridge University Press.
- Ashbrook, J. B. (1984). Neurotheology. The working brain and the work of theology. *Zygon. Journal of Religion & Science*, 19, 331-350.
- Augras, M. (2001). Secours d'urgence: Le "show" de Saint Expédit. *Sociétés. Revue des Sciences Humaines et Sociales*, 72(2), 125-237.
- Boyer, P. (1994). *The naturalness of religious ideas: A cognitive theory of religion*. Berkeley: University of California Press.
- Burkert, W. (1996). *Creation of the sacred. Tracks of biology in early religions*. Cambridge, MA: Harvard University Press. Trad. it. *La creazione del Sacro. Orme biologiche nell'esperienza religiosa*. Milano: Adelphi, 2003.
- Carnap, R. (1931). Psychologie in physikalischer Sprache. *Erkenntnis*, 2, 107-142.
- Curatola, G. (2002). Quale natura per la mente? Interrogativi e intersezioni, fra neuroscienze e psicoanalisi. *Rivista di Psicologia Analitica*, n.s. 14, 55-72.
- d'Aquili, E. G., & Newberg, A. B. (1993). Religious and mystical states: a neuropsychological model. *Zygon. Journal of Religion & Science*, 28, 177-199.
- d'Aquili, E. G., & Newberg, A. B. (1998). The neuropsychological basis of religions, or why God won't go away. *Zygon. Journal of Religion & Science*, 33, 187-201.
- d'Aquili, E. G., & Newberg, A. B. (1999). *The mystical mind. Probing the biology of religious experience*. Minneapolis, MN: Fortress.
- Fagnani, D., & Rossi, M. T. (Eds.). (1998). *Simbolo, metafora, invocazione tra religione e psicoanalisi*. Bergamo: Moretti & Vitali.
- Fenwick, P., & Fenwick, E. (1995). *The Truth in the light. An investigation of over 300 near-death experiences*. New York: Berkley Bools.
- Flournoy, T. (1902). Les principes de la psychologie religieuse. *Archives de Psychologie*, 2, 33-57.
- Flournoy, T. (1903). Observations de psychologie religieuse. *Archives de Psychologie*, 2, 326-371.
- Flournoy, T. (1910). *Psicologia religiosa*. Pavia: Mattei, Speroni e C.
- Freud, S. (1926a). Il problema dell'analisi condotta da non medici. Conversazione con un interlocutore imparziale. In *Opere* (Vol. 10, pp. 351-415). Torino: Boringhieri, 1978.
- Freud, S. (1926b). The question of lay analysis. Conversations with an impartial person. In *Standard Edition* (Vol. 20, pp. 183-250). London: Hogarth Press and the Institute of Psycho-Analysis, 1959.
- Freud, S. (1927a). Poscript to The question of lay analysis. In *Standard Edition* (Vol. 20, pp. 251-258). London: Hogarth Press and the Institute of Psycho-Analysis, 1959.
- Freud, S. (1927b). Poscritto a Il problema dell'analisi condotta da non medici. In *Opere* (Vol. 10, pp. 416-423). Torino: Boringhieri, 1978.
- Freud, S. (1963a). *Psychoanalysis and faith. The letters of Sigmund Freud & Oskar Pfister*. New York: Basic Books.
- Freud, S. (1963b). *Sigmund Freud - Oskar Pfister: Briefe 1909-1939*. Frankfurt a. M.: S. Fischer.
- Freud, S. (1970). *Psicoanalisi e fede. Carteggio col pastore Pfister, 1909-1939*. Torino: Boringhieri.

- Guthrie, S. (2001). Why Gods? A cognitive theory. In J. Andresen (Ed.), *Religion in mind. Cognitive perspectives on religious belief, ritual and experience* (pp. 94-111). Cambridge: Cambridge University Press.
- Hardy, A. C. (1975a). *The biology of God*. London: Jonathan Cape.
- Hardy, A. C. (1975b). *Why I believe the power of God is a biological reality*. Rockford, IL: ??????
- Holmes, H. R. (1993). Thinking about religion and experiencing the brain: Eugene d'Aquili's biogenetic structural theory of Absolute Unitary Being. *Zygon. Journal of Religion & Science*, 28, 201-215.
- Hood jr, R. W., Spilka, B., Hunsberger, B., & Gorsuch, R. (1996). *Psychology of religion. An empirical approach* (2 ed.). New York: Guilfort press. Trad. it. *Psicologia della religione. Prospettive psicosociali ed empiriche*. Torino: Centro Scientifico Editore, 2001.
- Introvigne, M. (1996). La costruzione sociale delle near-death experiences: il caso Betty Eadie. *La critica sociologica*, ?????, 78-88.
- Jean-Baptiste, P. (2003). *La biologie de Dieu. Comment les sciences du cerveau expliquent la religion et la foi*. Paris: Agnès Viénot Editions.
- Joseph, R. (2001). *The transmitter to God: The limbic system, the soul, and Spirituality* (2nd ed.). San Jose, CA: University Press.
- Joseph, R. (2003). *Neurotheology: brain, science, spirituality, religious experience* (2th ed.). San Jose, CA: University Press.
- Kaplan-Solms, K., & Solms, M. (2000). *Clinical studies in neuro-psychoanalysis. An introduction to a depth neuropsychology*. London: Karnac Books. Trad. it. *Neuropsicoanalisi. Un'introduzione clinica alla neuropsicologia del profondo*. Milano: Raffaello Cortina, 2002.
- Lopez, D. (1983). *La psicoanalisi della persona*. Torino: Boringhieri.
- Lopez, D., & Zorzi, L. (1990). *Dalla depressione al sorgere della persona*. Milano: Raffaello Cortina.
- Lopez, D., & Zorzi Meneguzzo, L. (1989). Dal carattere alla persona. In A. A. Semi (Ed.), *Trattato di psicoanalisi. Vol. 2: Clinica* (pp. 371-514). Milano: Raffaello Cortina.
- Maggioni, D. (1998). "Mentecervellamente": dominio diviso? In M. A. Accerboni, L. Andreoli, V. Barbieri, C. Elia, D. Maggioni & M. Panero (Eds.), *Affetti e pensiero. Orientamenti psicoanalitici* (pp. 42-74). Bergamo: Moretti & Vitali.
- Magnani, M. (2005). *Spiegare i miracoli. Interpretazione critica di prodigi e guarigioni miracolose*. Bari: Dedalo.
- Makarec, K., & Persinger, M. A. (1985). Temporal lobe signs. Electroencephalographic validity and enhanced scores in special populations. *Perceptual and Motor Skills*, 60, 831-842.
- Maretti, D., Gamba, A., Aletti, M., Bianchi, F., Bobbio Pallavicini, F., & Chiaranda, M. (1990). Studio sullo stress psicofisico da ricovero nel Reparto di Terapia Intensiva. II: risultati dell'indagine preliminare. *Minerva Anestesiologica*, 56, 1201-1203.
- Margnelli, M., & Gagliardi, G. (1994). Studi sulla psicofisiologia dell'estasi mistica cattolica: problemi di un metodo. In M. Aletti (Ed.), *Religione o psicoterapia? Nuovi fenomeni e movimenti alla luce della psicologia* (pp. 267-294). Roma: LAS.
- Margnelli, M., & Gagliardi, G. (1999). Gli stati di coscienza mistici come percorso evolutivo. In M. Aletti & G. Rossi (Eds.), *Ricerca di sé e trascendenza. Approcci psicologici all'identità religiosa in una società pluralista* (pp. 191-207). Torino: Centro Scientifico Editore.
- McNamara, P. (2001). Religion and the frontal lobe. In J. Andresen (Ed.), *Religion in mind. Cognitive perspectives on religious belief, ritual and experience* (pp. 237-256). Cambridge: Cambridge University Press.
- Milanesi, G., & Aletti, M. (1973). *Psicologia della religione*. Torino: ElleDiCi.
- Modell, A. H. (1993). *The private self*. Cambridge: Harvard University Press.
- Moody, R. A., Jr. (1975). *Life after life. The investigation of a phenomenon. Survival of bodily death*. Atlanta: Mockingbird Books. Trad. it. *La vita oltre la vita*. Milano: Mondadori, 1987.

- Moody, R. A., Jr. (1977). *Reflections on life after life*. Atlanta: Mockingbird Books.
- Moody, R. A., Jr. (1999). *The last laugh. A new philosophy of Near-Death Experiences, apparitions, and the paranormal*. Charlottesville, VA: Hampton Roads. Trad. it. *L'ultimo sorriso*. Milano: Mondadori, 2001.
- Newberg, A. B., Alavi, A., Baime, M., Mozley, P. D., & d'Aquili, E. G. (1997). The measurement of cerebral blood flow during the complex task cognitive of meditation using HMPAO-SPECT imaging. *Journal of Nuclear Medicine*, 38, 95.
- Newberg, A. B., Alavi, A., Baime, M., Pourdehnad, M., Santanna, J., & d'Aquili, E. G. (2001). The measurement of regional cerebral blood flow during the complex cognitive task of meditation: a preliminary SPECT study. *Psychiatry Research: Neuroimaging*, 106(2), 113-122.
- Newberg, A. B., & d'Aquili, E. G. (1998). The neuropsychology of spiritual experience. In H. G. Koenig (Ed.), *Handbook of religion and mental health* (pp. 75-94). San Diego-London-Boston: Academic Press.
- Newberg, A. B., d'Aquili, E. G., & Rause, V. (2001). *Why God won't go away: brain science and the biology of belief*. New York: Ballantine Books. Trad. it. *Dio nel cervello. La prova biologica della fede*. Milano: Mondadori, 2002.
- Newberg, A. B., & d'Aquili, E. G. (2000). The neuropsychology of religious and spiritual experience. In J. Andresen & R. K. C. Forman (Eds.), *Cognitive models and spiritual maps: Interdisciplinary explorations of religious experience* (pp. 251-266). London: Imprint Academy.
- Newberg, A. B., & Iversen, J. (2003a). The neural basis of the complex mental task of meditation: neurotransmitter and neurochemical considerations. *Medical Hypotheses*, 61(2), 282-291.
- Newberg, A. B., & Iversen, J. (2003b). On the "neuro" in neurotheology. In R. Joseph (Ed.), *Neurotheology, brain, science, spirituality, religious experience* (Expanded ed., pp. 251-268). San Jose, CA: University Press.
- Newberg, A. B., & Lee, B. Y. (2005). The neuroscientific study of religious and spiritual phenomena: or why God doesn't use biostatistics. *Zygon. Journal of Religion & Science*, 40 469-489.
- Newberg, A. B., Pourdehnad, M., Alavi, A., & d'Aquili, E. G. (2003). Cerebral blood flow during meditative prayer: Preliminary findings and methodological issues. *Perceptual and Motor Skills*, 97, 625-630.
- Pacciolla, A. (1995). *Esperienze di pre-morte. Fenomenologia e ipotesi interpretative*. Cinisello Balsamo, MI: San Paolo.
- Paloutzian, R. F., Fikes, T. G., & Hutsebaut, D. (2003). A social cognition interpretation of neurotheological events. In R. Joseph (Ed.), *Neurotheology, brain, science, spirituality, religious experience* (Expanded ed., pp. 189-194). San Jose, CA: University Press.
- Paloutzian, R. F., & Park, C. L. (2005a). Integrative themes in the current science of the psychology of religion. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality* (pp. 3-20). New York-London: Guilford Press.
- Paloutzian, R. F., & Park, C. L. (Eds.). (2005b). *Handbook of the psychology of religion and spirituality*. New York-London: The Guilford Press.
- Pelizzoni, M. (1999). Alterazioni della temperatura basale nei distretti dell'hara e del plesso solare in un gruppo di meditazione tantrica tibetana. In M. Aletti & G. Rossi (Eds.), *Ricerca di sé e trascendenza. Approcci psicologici all'identità religiosa in una società pluralista* (pp. 209-213). Torino: Centro Scientifico Editore.
- Persinger, M. A. (1983). Religious and mystical experiences as artifacts of temporal lobe function: a general hypothesis. *Perceptual and Motor Skills*, 57, 1255-1262.
- Persinger, M. A. (1984). People who report religious experiences may also display enhanced temporal-lobe signs. *Perceptual and Motor Skills*, 58, 963-975.

- Persinger, M. A. (1987a). MMPI profiles of normal people who display frequent temporal-lobe signs. *Perceptual and Motor Skills*, 64, 1112-1114.
- Persinger, M. A. (1987b). *Neuropsychological bases of God beliefs*. New York: Praeger.
- Persinger, M. A. (1993). Transcendental meditation and general meditation are associated with enhanced complex partial epileptic-like signs: evidence for “cognitive” kindling? *Perceptual and Motor Skills*, 76, 80-82.
- Persinger, M. A. (1997). I would kill in God’s name: role of sex, weekly attendance, report of a religious experience and limbic lability. *Perceptual and Motor Skills*, 85, 128-130.
- Persinger, M. A. (2003). Experimental simulation of the God experience: implications for religious beliefs and the future of the human species. In R. Joseph (Ed.), *Neurotheology: Brain, science, spirituality, religious experience* (2th ed., pp. 279-292). San Jose, CA: University Press.
- Persinger, M. A., & Koren, S. A. (2001). Predicting the characteristics of haunts from geomagnetic factors and brain sensitivity: Evidence from field and experimental studies. In J. Houran & R. Lange (Eds.), *Hauntings and poltergeists: multidisciplinary perspectives* (pp. 179-194). Jefferson, NC: MaFarland & Company.
- Persinger, M. A., & Makarec, K. (1987). Temporal lobe epileptic signs and correlative behaviors displayed by normal populations. *Journal of General Psychology*, 114, 179-195.
- Persinger, M. A., & Makarec, K. (1993). Complex partial epileptic-like signs as a continuum from normals to epileptics: normative data and clinical populations. *Journal of Clinical Psychology*, 49(1), 33-45.
- Pigliucci, M. (2003). Neuro-theology, a rather skeptical perspective. In R. Joseph (Ed.), *Neurotheology: Brain, science, spirituality, religious experience* (pp. 269-271). San Jose, CA: University Press.
- Pyysiäinen, I. (2001). Cognition, emotion and religious experience. In J. Andresen (Ed.), *Religion in mind. Cognitive perspectives on religious belief, ritual and experience* (pp. 70-93). Cambridge, MA: Cambridge University Press.
- Pyysiäinen, I. (2003). *How Religion Works. Toward a New Cognitive Science of Religion*. Leiden-Boston: Brill.
- Pyysiäinen, I., Lindeman, M., & Honkela, T. (2003). Counterintuitiveness as the hallmark of religiosity. *Religion*, 33, 341-355.
- Rayburn, C. A. (2001). Theobiology, spirituality, religiousness, and the wizard of Oz. *Psychology of Religion Newsletter. American Psychological Association Division 36*, 26(1), 1-11.
- Rayburn, C. A., & Richmond, L. J. (1998). “Theobiology”. Attempting to understand God and ourselves. *Journal of Religion and Health*, 37, 345-356.
- Reich, K. H. (2003). The person-God relationship: A dynamic model. *International Journal for the Psychology of Religion*, 13, 229-247.
- Reich, K. H. (2004). Psychology of religion and neurobiology: which relationship? . *Archiv für Religionspsychologie/Archive for the Psychology of Religion*, 26, 117-133.
- Ring, K. (1980). *Life at death: a scientific investigation of the Near-Death Experience*. New York: Coward, McCann & Geoghegan.
- Russell, R. J., Murphy, N., Meyering, T. C., & Arbib, M. E. (Eds.). (2002). *Neuroscience and the person. Scientific perspectives on divine action*. Vatican City State: Vatican Observatory Publications / Berkeley, CA: Center for Theology and the Natural Sciences.
- Sacks, O. (1984). *A leg to stand on*. New York: Harper Collins. Trad. it. *Su una gamba sola*. Milano: Adelphi, 1996.
- Sequeri, P. (2003). Neuroscienze e insegnamento della Chiesa. *La Società*, 13(1), 63-73.
- Solms, M., & Saling, M. (1990). *A moment of transition: two neuroscientific articles by Sigmund Freud*. London: Karnac Books-The Institute of Psycho-Analysis.
- Solms, M., & Turnbull, O. (2002). *The brain and the inner world: an introduction to the neuroscience of subjective experience*. New York: Other Press. Trad. it. *Il cervello e il*

- mondo interno. Introduzione alle neuroscienze dell'esperienza soggettiva.* Milano: Raffaello Cortina, 2004.
- Terrin, A. N. (2004). *Religione e neuroscienze. Una sfida per l'antropologia culturale.* Brescia: Morcelliana.
- Tramonti, F. (2003). *Psicoanalisi e neuroscienze: Guida bibliografica. 1911-2002.* Pisa: Edizioni ETS.
- Watts, F. (2002a). Cognitive neuroscience and religious consciousness. In R. J. Russel, N. Murphy, T. C. Meyering & M. E. Arbib (Eds.), *Neuroscience and the person. Scientific perspectives on divine action* (pp. 327-346). Vatican City State: Vatican Observatory Publications / Berkeley, CA: Center for Theology and the Natural Sciences.
- Watts, F. (2002b). *Theology and psychology.* Aldershot, England: Ashgate.
- Wenergrat, B. (1990). *The divine archetype. The sociobiology and psychology of religion.* Lexington, MA: Lexington Books.
- Wilson, E. O. (1975). *Sociobiology. The new synthesis.* Cambridge, MA: Harvard University Press. Trad. it. *Sociobiologia: la nuova sintesi.* Bologna: Zanichelli, 1983.
- Wilson, E. O. (1978). *On human nature.* Cambridge, MA: Harvard University Press. Trad. it. *Sulla natura umana.* Bologna: Zanichelli, 1980.
- Wittgenstein, L. (1953). *Philosophische Untersuchungen / Philosophical investigations* (G. E. M. Anscombe, Trans.). Oxford: Basil Blackwell. Trad. it. *Ricerche filosofiche.* Torino: Einaudi, 1967.
- Wittgenstein, L. (1980). *Bemerkungen über die Philosophie der Psychologie / Remarks on the philosophy of psychology.* Oxford: Basil Blackwell. Trad. it. *Osservazioni sulla filosofia della psicologia.* Milano: Adelphi, 1990.
- Wulff, D. M. (1997). *Psychology of religion: Classic and contemporary* (2. ed.). New York: Wiley.