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Edited by Jensine Andresen

Excerpt

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## CHAPTER I

*Introduction: towards a cognitive science of religion**Jensine Andresen*

We are witnessing the birth of a new field and a new approach to understanding religion. Spurred on by two decades of advance within the field of cognitive science, scholars within many disciplines have begun to apply cognitive science concepts to a diverse array of phenomena. Although considered by some to be *sui generis*, the domains of religious experience, belief, and behavior have not been exempt from such treatment. Indeed, in the last decade, scholars from varied disciplinary arenas increasingly are willing to tackle, both individually and collaboratively, cognitive theories of religion in general and the neural bases of religion in specific. Activity has coalesced around the emergence of a coherent area of research and writing, what I refer to here as a “cognitive science of religion” following Lakoff and Johnson’s (1999) recommendation that we replace the “philosophy of *x*” with the “cognitive science of *x*.” This so-called cognitive science of religion is, first and foremost, a scientific and explanatory endeavor that draws on findings from the various sciences of mind. Like Lakoff and Johnson’s loosening of philosophy from its analytic-cum-transcendent moorings, our endeavor is similarly “bottom up” – we propose to free religion from the realm of metaphysical speculation and to anchor it instead in the empirical. At the same time, we seek to respect deeply the integrity of religious *qualia*, the phenomenology of religious experience, and the sincerity of religious belief. We therefore engage the general problems of belief and subjectivity while eschewing reductionism. Although we attempt to explain certain facets of religious experience, belief, and behavior, we do not, by any stretch of the imagination, attempt to “explain them away.”

This volume has a straightforward programmatic agenda – to examine the cognitive dimensions of religion and to contextualize

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this discussion within a naturalistic view of culture (for more on naturalism and religion, see Griffin 2000). This general approach to cognitive science and religion, which draws heavily on developmental psychology and the anthropology of religion, sees religious representations and ritual enactments as a subset of cultural representations and actions. Many of our contributors seek to identify, within the constraints of empirical data, the cognitive dimensions of particular religious experiences and enactments. We believe that this approach offers exciting possibilities, including the potential for new interdisciplinary linkages between scholars in fields that have become increasingly specialized over the years. Furthermore, although religion's ideological, doctrinal, ritual, experiential, ethical, and social facets (Smart 1996; Watts and Williams 1988, 10) usefully may be distinguished, the contributors to this volume do not attempt rigorously to differentiate "religious experience," "religious belief," and "religious behavior," for example, since such categories obviously permit for a healthy dose of "lived" overlap (also see Beit-Hallahmi and Argyle 1997).

Our volume summarizes some of the advances made in the cognitive study of religion over the last decade, and it includes work by some of the original contributors to this field. As our volume's subtitle implies, some of our chapters focus more on the nature of experience, while others explicitly question such a focus or choose to draw attention to the formation of religious concepts. Indeed, because "religion" itself is far from monolithic, we hope our readers will conclude, as we have, that a variety of cognitive science approaches will complement one another in the emerging cognitive science of religion. Some methodologies may be more appropriate to the phenomenology of religious experience, others may lend themselves to religious ritual practices, and yet others may illuminate the mechanisms supporting religious belief and concept formation. There is no need to choose one paramount methodology over all others – the complex phenomenology of the religious simply does not recommend it.

It is our hope that these reflections on the emerging cognitive science of religion will be of interest to a broad constituency, from scholars of religion, philosophy, anthropology, psychology, sociology, and history, to scholars from cognitive science who are now branching out to formulate scientific approaches to cultural and cognitive phenomena (e.g., Pinker 1994; Diamond 1997). Although

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many modes of “studying religion” have been attempted in the past – everything from the strictly historical and philological to the strictly hermeneutical and theological – it is never too late to expand our methodological repertoire. Here, we apply findings from cognitive science to the domain of religion, an area many cognitive scientists so far have eschewed.

## BACKGROUND ON COGNITIVE SCIENCE

As Gardner (1985, 9) quips, cognitive science has a relatively short history but a very long past. Indeed, Singh *et al.* (1998, 21) point out that the tenth book of the ancient *Rgveda* enumerates various cognitive and affective activities of human consciousness and accords cognition an important role in the realization of a kind of pure consciousness. In the West, cognitive science’s “relatively short history” refers to the movement from cognitivism to connectionism, onwards to more recent “enactive” models, while the “very long past” refers to historical developments relating to theories of perception and the philosophy of mind.

On the way to the current cognitive science understanding of mind as a physical symbol system with intricate representational capacities and rich computational resources, the history of the theory of perception and the “Theory of Mind (ToM)” has passed through many key transitions (see Meyering 1989; Gibson 1991). In the late nineteenth and early twentieth centuries, even the iconoclast William James (1885, 1904) speculated on the nature of cognition, characterizing it as a function of consciousness, which in turn he characterized as a function instead of as an entity. By the 1940s and 1950s, the potential sciences of mind were fragmented into disparate disciplines including neurology, psychoanalysis, and behaviorist experimental psychology. Concurrent with a movement in the social sciences away from behaviorism and towards the study of cognition, the modern discipline of cognitive science emerged in the 1950s with the advent of modern digital computers (Varela *et al.* 1996 [1991], xvi).

Prior to 1956, most theory in linguistics was behaviorist in approach, but Noam Chomsky’s *Syntactic Structures* (1957) introduced the idea that the “grammar” speakers must learn in order to speak a language is a mental object not describable, or accountable in behaviorist stimulus–response terms (see Miller and Gazzaniga 1984, 4–5). Chomsky had written scathing criticisms of B. F. Skinner and

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the behaviorist approach to human language and thought, favoring instead a strict Cartesian formalism based on the idea that language, which derives from logic, instantiates itself in the human brain. In his Woodbridge Lectures of 1968, Piaget (1970) criticized Chomsky, saying, approximately thirty years before Lakoff and Johnson (1999) underline the same point (see also Huck and Godsmith 1995), that formalism is not enough. Although Piaget did admit some “correspondence” between formalization and psychological formation, he stressed that philosophers need to take empirical psychology seriously (Benson 2000). A few years later, in 1975, Chomsky and Piaget debated with one another at Abbaye De Royaumont, near Paris (Piattelli-Palmarini 1980). The two disagreed on the status of cognitive development – Chomsky argued that developmental cognitive matters are not relevant to the internal formal structuring of thought, while Piaget (and much recent neurological research) claimed that they are (Benson 2000; also see Reich 1993; Wulff 1993; Fowler 1993).

According to Chomsky (1980), domain-specific cognition refers to the idea that humans are endowed with a number of innate systems of knowledge, such as knowledge of language, knowledge of physical objects, and knowledge of space. The term “domain” refers to a concatenation of phenomena involving the entities recognized by the theory, and cognitive domains are seen to pick out a set of entities in the world and to process privileged sorts of information about these entities. During the 1960s, Chomsky used his work in theoretical linguistics to challenge the Renaissance picture of mind as a blank slate upon which the environment leaves its traces and against dominant notions at the time that language was environmentally determined. He argued instead for an innate linguistic module in the brain, claiming that the brain was genetically programmed to contain a specification of an abstract system of syntactic rules that are brought to bear on the incoming acoustic flux (McGinn 1998, 34–35; Chomsky 1997a and b; Agassi 1997). Now, one finds Karmiloff-Smith’s (1992) theory of developmental change straddling the gulf separating Piaget’s (1954 [1937], 1971 [1967], 1972 [1970]) constructivism and both Chomsky’s and Fodor’s (1981) nativism.

By the early 1960s, what Searle (1992) refers to as the strong “cognitivist” program had developed in artificial intelligence (AI) circles. This program sports a cognitivist model of mind, a computational model in which cognition is postulated to be information

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processing as symbolic computation, i.e., the rule-based manipulation of symbols. According to this view, nearly all aspects of human cognition, including perception, memory, reason, knowledge, decision-making, learning, language, and in some cases, consciousness and emotions, are examined in terms of information processing (Hardcastle 1996, 5–6; Putnam 1960; Young 1987, 26–33; Thagard 1988; Black 1991; Churchland and Sejnowski 1992). In contrast to this strong model, with its requisite strong philosophical formulations, a softer perspective sees cognition as helpfully modeled by symbolic computation. Indeed, most current cognitivist research follows this softer view (Wildman 1999).

Articulating a cognitivist theory, Pinker (1997) generalizes from a special theory relating to language (Pinker 1994) to speculate about the nature of the mind. Pinker's approach has been dubbed "Cognitive Darwinism" (McGinn 1998, 34–35), since it synthesizes neo-Darwinian, gene-based natural selection theory and a computational model of mind (also see Depew and Weber 1994). Pinker's model delineates four elements central: computationalism; modularity; innateness; and adaptationism. "Computationalism," as we have noted, construes the mind as a neural computer that processes information on the basis of a symbolic code. The mind performs operations on symbol strings in order to solve problems, such as forming accurate representations of the environment. "Modularity" refers to the idea that the mind is composed of a collection of relatively independent, special-purpose modules. These distinct, cognitive programs are believed to perform particular functions, such as language and vision. Each module has its own location in cognitive space, its own principles, and its own domain of expertise. Still, despite modularity, the degree of coordination of mental activity is open to question (see Fodor 1983, 1994). Third in Pinker's line-up, "innateness," refers to the notion that the mind's computational modules are genetically fixed. And "adaptationism" refers to the idea that the mind's innate computational modules are biologically functional, meaning that they have evolved by natural selection and that their functions are adaptive to the conditions in which they evolved (for another example of a theory combining modularity and adaptationism, see Sperber 1994).

In the late 1970s, the "connectionist" approach in cognitive science began to characterize the nature of human cognition as networks that give rise to typical and regular dynamical behavior

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instead of as a system of rules that manipulates symbols (Rumelhart 1989; for a feminist/psychoanalytic review of connectionist theories, see Wilson 1998). Humberto R. Maturana bears much of the credit for inaugurating the interdisciplinary, constructivist endeavor, which brought together biologists, ethologists, philosophers, and psychologists to investigate questions relating to cognition (Foerst 1998, 95; Maturana and Varela 1987; Watzlawick 1984). Merleau-Ponty (1962) also contributed to the connectionist revolution by introducing phenomenology into the nascent field of cognitive science in order to address more directly questions relating to the world of lived, human experience. In contrast to earlier information-processing metaphors, which emphasized input-output processing, Merleau-Ponty championed emergent, interactive, and holistic perspectives, focusing especially on transformations of consciousness induced by ritual activities such as yogic meditation (also see Wrathall and Kelly 1996).

Arising within the context of cross-disciplinary scientific naming of “emergent” properties, connectionism now finds itself reinvigorated by the study of complexity. The connectionist approach emphasizes the emergence of high-level structures or entities from the interaction of lower-level terms. In addition to characterizing cognition as the emergence of global states in a network of simple components, connectionism also holds that cognition works through local rules for individual operation and through rules for changes in the connectivity among the elements. Utilizing concepts such as “self-organization,” connectionism (also called the “associationist” or “network dynamical” approach) hypothesizes that cognition “emerges” from the interaction of the structures and processes of our physiological systems, and it tentatively applies this proposition even to slippery phenomena such as “consciousness” (Varela *et al.* 1996 [1991], 87–99; Horst 1996). In the dominant forms of computationalism and connectionism, cognitive processes and their roles in cognitive behavior are viewed in terms of representations that correspond to properties and events in the world. Indeed, it is just this soup from which Sperber fashions his theories of “mental representations.”

Marked by the publication of *The Embodied Mind: Cognitive Science and Human Experience* (1996 [1991]) by Varela, Thompson, and Rosch, the “enactionist” paradigm in cognitive science made its debut in the early 1990s, bringing Husserlian-style phenomenology together

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with Madhyamaka Buddhist philosophy and the work of Merleau-Ponty. Enactionism questions the relevance of representations *per se* while acknowledging the importance of dynamical mechanisms and emergence. According to the enactionist view, cognition is embodied action – the enactive activity of situated agents who create regular interdependencies with their surroundings. Indeed, this view has been influential in the development of Lakoff and Johnson's (1999) "embodied realism." Whereas the realism of cognitivism and connectionism maintains that cognition is related primarily to problem-solving, Varela *et al.* (1996 [1991], 173–174) describe the phenomenon of "perceptually-guided action," which contributes to the enactment of the world instead of being simply embedded within and constrained by the surrounding world. Indeed, Clark (1993, 1997) and Hendriks-Jansen (1996) articulate similarly complex views of the interactive emergence of cognition and the world, and Thelen and Smith (1994) bring dynamic systems theory together with research in neuroscience and neural development to forge a new theory of the development of cognition and action.

## THE STUDY OF RELIGION

In the late nineteenth century, Edwin Starbuck, a pupil of the first professor of psychology at Harvard, William James (the brother of Henry James), undertook research inaugurating the so-called scientific study of religious experience. Starbuck (1899) was the first person to construct a questionnaire that inquired into people's experience of religious conversion, an important element of Protestant New England culture with its Puritan and Pietist heritage (Hay 1990). In 1901, William James traveled to Scotland to deliver the Gifford Lectures of 1901 and 1902 at Edinburgh University. These lectures subsequently were published in 1902 under the title *The Varieties of Religious Experience: A Study in Human Nature*. James drew heavily on examples of contemporary conversion experiences provided by his student, Starbuck (Hay 1990, 4), and, interestingly, he entitled his first chapter in the book "Religion and Neurology." Although prior to James' usage, the term "religious experience" suggested feelings and emotions deliberately cultivated in certain Christian communities and regarded as evidence of divine grace, James used the term more inclusively. And, like Starbuck, James approached testaments of individual religious experience according



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to the systematic norms of the “objective science” current in his day (Moore 1938, 1). James was convinced of the futility of all attempts to capture the essence of religion in a simple definition, which led him to favor an empirical approach to religion. Both a psychologist and philosopher, James (1902, 28–30) distinguished “institutional religion” and “personal religion,” claiming that “personal religion will prove itself more fundamental than either theology or ecclesiasticism.” He also contrasted the “original experiences” of the founders of religious sects with the “second-hand” religious life of followers.

The foundations of James’ theory of experience are laid out in his *Principles of Psychology* (1890), in which he advanced two distinct theses. First, James reinterpreted introspective psychology by denying that sensations, images, and ideas are discrete, replacing them instead with a “stream of consciousness” (foreshadowing his radical empiricism and realism); and, second, he advanced a biological thesis by proposing criteria for the existence of mind (foreshadowing his anti-intellectualism and pragmatism) (Dewey 1925, 369–370; Moore 1938, 8, 19). James was himself particularly interested in the biological mechanisms associated with human psychology (Singh *et al.* 1998, 25), and he distinguished two kinds of knowledge, “knowledge-by-acquaintance” (direct sensory contact, as when we taste a fruit); and “knowledge-about” (conception or representation, as when we name a fruit). He believed that the former, being gained in immediate experience, was more fundamental, while the latter was the product of the reflective activity of mind operating on the material supplied by immediate experience (James 1890, vol. 1, 221, as cited in Moore 1938, 15). Also writing around the time of William James, Borden Parker Bowne (1908) and his “personalist” movement offered a proto-cognitive approach to religious experience by considering the relationship between mental states and experience of the divine. Precursors to these ideas also exist in Bowne’s (1882, 1897) early works.

Freud (1918, 1928, 1930, 1939, 1956 [1928]) launched the “psycho-analytic” investigation of religious experience, comparing religious and compulsive behavior (1989 [1907]) and claiming that both magic and religion are projections of neurotic wish-fulfillment and psychotic delusions (also see Stark and Bainbridge 1987, 159; Philp 1956; Eysenck and Wilson 1973; Rainey 1975). Although Freud himself saw the investigation of religious experience to be but one dimension in an overall science of mind (Kitcher 1992), his pioneering work



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inspired a range of researchers interested in the psychoanalytic dimensions of religion (e.g., Fromm 1950; Zilboorg 1962; Homans 1970; Beit-Hallahmi 1978; Rizzuto 1979; Handelsman 1981, 1985; Meissner 1984; Smith 1990). In the last decade or so, work correlating religion with styles of attachment has become increasingly popular. For example, Kirkpatrick and Shaver (1990) claim that findings concerning images of God, conversion, and prayer can be integrated conceptually into a framework based on attachment theory, while Kirkpatrick (1997) examines religious belief and behavior in relationship to attachment style using longitudinal data (also see St. Clair 1994).

Writing around the time of Freud but from a different perspective, Rudolf Otto (1950 [1923]) adopted Schleiermacher's definition of religion as the "feeling of absolute dependence." Otto's contention that "If there be any single domain of human experience that, presents us with something unmistakably specific and unique, peculiar to itself, assuredly it is that of the religious life" (1950 [1923], 4), stands in marked contrast to James' questioning of whether or not religious experience contains anything of a psychologically specific character (Moore 1938, 76). Henri Bergson (1935 [1932]) also set out to develop a theory of religious experience, by examining the nature and psychological roots of religion and the related sphere of morality. According to Bergson, religious experience is rooted in human striving, and its mystical and imaginative features are constrained by social context.

Gerardus van der Leeuw (1938 [1933]) and Mircea Eliade (1959) have been influential in drawing attention to the so-called *sui generis* nature of the sacred, in the aftermath of what some believed to be the alarming attempt by psychoanalysis and science to explain religion away. Like Otto, van der Leeuw and Eliade both approached religion phenomenologically by attending to the phenomena of religious experience while attempting to bracket out cultural biases in order to bring into focus previously neglected aspects of the experience. Like Otto, van der Leeuw, who was influenced by Kierkegaard, Nietzsche, and Husserl, attended to the nonrational aspects of the experience of the sacred, emphasizing especially the characteristics of power and dread. Otto and van der Leeuw, also influenced Eliade, who studied the phenomenology of religious experience in both its rational and nonrational manifestations, and systematically articulated the rational and archetypal

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structure of the sacred (Smith 1995, 42–47). Eliade's predecessor at the University of Chicago, Joachim Wach (1958), left us an early working definition of religious experience, while other scholars focused on the epistemology of religion (e.g., Bouquet 1968) and its relationship to theology (e.g., Cargas and Lee 1976). Naturally, many scholars also examine religious experience in the context of particular religious traditions (e.g., Antes 1992; Smart 1998).

Over the years, scholars of religion have debated whether it is appropriate to “explain” religion rather than merely to “interpret” it. Although primarily “biological” accounts of religion still remain suspect in certain circles (e.g., Rolston 1999 a and b), explanatory models of religion, which never completely went out of vogue in the psychology and sociology of religion, have appeared within the last decade in religious studies discussions (e.g., Sullivan 1995, 2000; Bagger 1999; Andresen 1999). Biological accounts of the adaptive value of religion and religious experience (e.g., Reynolds 1976; Reynolds and Tanner 1983; Jones and Reynolds 1995; Hinde 1997), or closely related accounts of the “social ecology” of religion (e.g., Reynolds and Tanner 1995), require theorists to consider how cognition and biology are interrelated.

In contrast to explanatory accounts, claims concerning the *sui generis* nature of the sacred served as inspiration for the formulation and application of “interpretive” strategies in religious studies (e.g., Beebe 1999; Mullin and Richey 1994; Fulop and Raboteau 1997; Spolsky 1993). Such claims also inspire an interpretive approach to anthropology and ethnology, including the anthropology of religion (e.g., Geertz 1973, 1983; Moore 1997; Bohannan and Glazer 1988 [1973]). Interpretive approaches to religion mitigate concerns about reductionism, which also exist in the psychology of religion. Stating that a neuropsychological approach is particularly appropriate when one is dealing with practices that affect bodily states, Wulff (1997, 112), for example, wonders whether referral to brain and other bodily processes is always the most illuminative course of action.

In fact, the attempt to formulate reasonable explanations for religion and religious experience need not be threatening – as McNamara (1999a) observes,

Even though language for experience can be decomposed into modules that are ultimately non-linguistic, that does not mean that language does not exist! It is the same with every other domain of cognition . . . Reductionist programs of research in the sciences will not cause the