Religion: A Radical-Constructivist Perspective

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> Context • In the literature of radical constructivism, the epistemology and ontology of religion has been rarely discussed. **> Problem** • I investigate the impact of radical constructivism on some aspects of religion – in particular, on the conflict that is sometimes perceived to arise between religion and natural science, discussed in the context of religious belief. **> Method** • It is argued that the epistemology of radical constructivism serves to distinguish between items of cognitive and non-cognitive knowledge. This makes it possible to discuss issues of religious belief, which are non-cognitive, from a constructivist epistemic and ontological perspective. **> Results** • I conclude that radical constructivism cannot be invoked to support or contradict any particular religious faith; the individual knower will construct her own ontology (i.e., her attitudes and convictions with respect to religious propositions), as part of her store of non-cognitive knowledge, in interaction with her environment (which includes other individuals). Note that the existence of this environment is accepted as given (thus repudiating the metaphysical position of solipsism); on the other hand, any knowledge of it must be constructed in the mind of the knower, and there is no way to identify any one construction as being objectively "right" or "true." Hence the truth value of propositions of religious conviction cannot be argued in cognitive terms. **> Implications** • It is argued that these results elevate the knower into a position of personal autonomy with respect to religious issues. One consequence of this is the emergence of a fundamental epistemic incompatibility between the worldviews of radical constructivism and religion of any kind. Another is that the old dichotomy between atheism and agnosticism disappears – or rather, becomes irrelevant. **> Constructivist content** • The role played by radical constructivism in the approach to cognitive vs. non-cognitive knowledge is discussed, specifically as pertaining to issues of religion. The construction of knowledge (of any kind) is a strictly personal enterprise, and the use of constructed non-cognitive knowledge then forms a basis for the individual knower's religious position. **> Key words** • **Radical constructivism, knowledge construction, cognition, non-cognitive knowledge, religion.**

Introduction

« 1 » An important ontological dimension of the human experience is that of *religion*. It is also one of the most contentious issues encountered in human society. In particular, there have been many conflicts between religion and science. One well-known example, which will be briefly addressed below, is the conflict between *Darwinism* (the theory of biological evolution, as generally accepted by natural scientists today) and *creationism* (the doctrine that holds that the biblical account of creation, as reported in the book of Genesis, is factually true), see, e.g., the books by Eugenie Scott (2009), Stephen Gould (1985) and Richard Dawkins (2006).

« 2 » Before proceeding, it should be said that the whole area of discourse generally referred to under the name "religion" offers many different aspects. In fact, several authors have raised the question of whether it is even meaningful to speak of religion as a coherent entity that can be meaningfully defined in itself. This is a strongly debated issue in the areas of philosophy and sociology of religion.[1] It is important to note here that the chosen central aspect of religion, as presented and highlighted in this article, is that of *religious belief* – i.e., a theistic prototype. This choice admittedly favours a view of religion that is rooted in theistic / deistic Abrahamic conceptions, and therefore may do injustice to many non-Abrahamic religions (such as Buddhism, Hinduism, and Taoism) by downplaying aspects that are central to them, such as: ritual, ceremony, personal experience, a pantheistic (the universe is God) or panentheistic (the universe is contained in God) cosmography, and others. This applies, in particular, to the two "determining characteristics" of religion: supernaturality and design, which are introduced and discussed in the article. They are appropriate for the prototype of religious belief, as noted above; however, they are clearly inadequate for a a discussion of worldviews such as Marxism, or Aristotelianism or teleological holism, which are generally regarded as *secular* systems of thought and argumentation. In short, it may be argued (quite justly) that the article is somewhat prejudiced in favour of the Abrahamic approach to religion, and that its arguments and results should be seen and judged in this context. In other words, the article focusses on *religious belief*, as a central aspect of religion, and this leads (unavoidably) to an emphasis on Abrahamic conceptions.[2]

1| The interested reader is referred to the book by Frederick Ferré (1967), where these debates are extensively discussed.

2| I am indebted to an anonymous reviewer for pointing out the necessity to clarify this point.

« 3 » In the present article, it will be convenient to restrict the term *science* and its usage to refer only to the *natural sciences* – thus, I shall generally omit the qualifier "natural" when addressing issues of science. Let me hasten to say that this must not be taken to imply that other scientific disciplines (such as the social sciences) are to be considered in any way as inferior to the natural sciences. The justification of the restriction is to highlight the difference between cognitive and non-cognitive propositions; thus I shall contrast the former, exemplified by propositions of (natural) science, with the latter, exemplified by propositions addressing religious issues.

« 4 » In the present article, I will discuss some epistemic and ontological aspects of religion, as they appear in the context of *radical constructivism*.

A brief summary of the theory of radical constructivism

« 5 » The epistemic theory of radical constructivism (RC) was originally proposed by Ernst von Glasersfeld (1995, 1996, 2000, 2006). This theory – in particular, its impact on the topic of *ethics* – has been extensively discussed elsewhere (Quale 2014a) – see also Gash (2000). Here I shall give only a brief summary of some central points of RC that are of particular relevance for the present discussion, which addresses the impact of this theory on *religion*.

« 6 » Von Glasersfeld defines RC as an epistemic theory, based on two fundamental propositions that may be summarized as follows (Glasersfeld 1995):

RC_1: Knowledge is not passively received, but is actively constructed by the knowing subject.

RC_2: The function of cognition is adaptive, and serves the subject's organization of her own experiential world, not the discovery of an objectively given reality.

« 7 » Thus, knowledge of any kind is constructed by, and resides in, the *individual knower* – i.e., the person who is in possession of this knowledge. It is based on her own sense perceptions and her reflections upon these; and it serves as a *model* describing (some part of) her own experiential world. According to RC (see, in particular, Glasersfeld 1995, 2000), there is no "right way" to perform such a construction. In other words, it is not possible to identify a "correct" model – i.e., one that gives a uniquely true and correct description of the world. Thus, the conception of an objectively given reality (the "real world"), existing independently of human beings, is not supported in constructivist epistemology. One speaks instead of the *experiential world* of an individual knower: this is the totality of sensory perceptions, and reflections upon these, as experienced by the knower right up to the present time; and it is the *only* source available to her, of whatever knowledge of the world that she can construct for herself.[3]

« 8 » To discuss issues of religious beliefs, I distinguish between the concepts of *cognition* vs. *non-cognition*: According to the viewpoint that is adopted in the present article, the most important characteristic of cognitive knowledge is that it is based on *reasoning* of some kind, using rules and procedures that can be agreed on between knowers, and thus demonstrated and communicated (say) from teachers to students. (Science and mathematics, of course, offer prime examples of such knowledge.) On the other hand, non-cognitive knowledge – sometimes termed "affective" or "emotive" knowledge – deals with personal experiences that cannot be so demonstrated or communicated: here there simply are no commonly accepted rules of reasoning to agree on! Such knowledge will include such categories as: emotion, volition, personal preferences, values, likes and dislikes, belief, etc.[4] One important example of non-cognitive knowledge is, as will be argued below, that offered by *religion*.

« 9 » Before proceeding, it should be noted that this distinction is expressly formulated such as to apply to the discussion in the present article. In recent years, the close relationship (some would say "inseparability") between cognition and emotion / volition has been an active issue in the discourse of cognitive science, see e.g., the recent book by Giovanna Colombetti (2014) and references therein.[5]

« 10 » Why is this distinction between cognitive and non-cognitive knowledge so important? It is clear from the propositions RC_1 and RC_2 that the radical constructivist conception of knowledge is inherently *individualistic*: it is the individual knower who constructs her knowledge, by organising and reflecting on her experiences of the world; and this is done in order for her to adapt to the world, not to discover it as an ontological reality existing externally to, and independently of, herself. Put in another way: each person must confront her own individual experiential world, defined as the totality of her individual perceptions, reflections, and memories at any one time, and construct her own knowledge (both cognitive and non-cognitive) of the world from this experience. Thus, in RC, the acquisition of knowledge is taken to be a strictly individual enterprise; and the knowledge that is acquired (constructed individually, as described above) is regarded as residing in the knower, i.e., the individual who has constructed this knowledge. The question then arises: How is it possible to *communicate* and *share* such individually constructed knowledge – say, between teacher and student, or between cooperating human beings? Or, is this indeed possible? As will be argued below, the answer depends on what kind of knowledge is being considered.

« 11 » In this context of communication, there emerges a difference between the cognitive and non-cognitive types of knowledge. (Recall the definition: cognitive knowledge does not rely on elements of individual volition or emotion, whereas non-cognitive knowledge does.) Loosely speaking: as human beings we learn, through our

3 | It should be noted that this individualist epistemic approach to the nature of knowledge has been hotly contested by many, who argue that knowledge of whatever kind, regardless of how it has been obtained, must be knowledge of something, existing externally to the knower. This is the *realist* position, further described below.

4 | This distinction between cognitive and non-cognitive knowledge is analogous to the distinction that is often made in epistemology between (respectively) *explicit* and *tacit* knowledge.

5 | I thank an anonymous reviewer for calling this debate to my attention.

individual development as members of a society and our continual social interactions with other members of this society, the use of a *mutually understood language* – that is to say, we gradually learn to assume[6] that certain words have meanings that are understood in the same way by the users, so that they can be employed for communication between them. Through such communication, using the mutually understood language, we can (and inevitably will) establish a base of *common knowledge*: i.e., knowledge that we experience as being (potentially, at least) possessed by all of us. But note that this experiencing of the knowledge as being "common" is subjective: in other words, any two communicating individuals can only *assume* that the words they use have the same meaning for both of them, and this assumption then only works until one says something that does not fit with the other's understanding. In other words: they feel that they understand each other, until something happens in their communication to show them that they do not – a point that has been strongly emphasised by von Glasersfeld (1995, 2006).

« 12 » We note that this common knowledge will comprise both cognitive and non-cognitive elements. So, does this not imply that both these types of knowledge can be *shared*? The answer is no, as can be demonstrated by two simple examples, outlined below:

- On the one hand, I can demonstrate and communicate to you how Maxwell's electromagnetic field equations serve to describe and explain many observable features of electric and magnetic phenomena (assuming, of course, that we both possess the requisite mathematical skills). This is *cognitive* knowledge, dependent on rules that can be communicated from me to you. And it is then *shared* between us, in the following sense: if we both agree to abide by the rules (here as given by Maxwellian electrodynamic theory), I can take any particular piece of this knowledge, deduce various consequences from it, and check that you will indeed arrive at these results using the same procedures that I have used. For instance, we will agree on the values of predicted quantities, such as the electric current that is produced by a known tension (voltage) when passing through a closed circuit of given resistance properties – this is Ohm's Law.[7]
- On the other hand, I *cannot* demonstrate or communicate to you how it "feels" for me to like a particular piece of music – why I like it, and why you should like it too. This is an instance of *non-cognitive* knowledge on my part, and this I cannot share with you – there are simply no rules to agree on! I can try to tell you in words how the music makes me feel, and it may then turn out that you think you "understand" what I am saying, because you happen to like the music too and tend to use similar words to describe this. Or, of course, it may be that the music leaves you unmoved, in which case you will probably have no idea what I am talking about. In any event, my *feeling* of liking the music is a piece of non-cognitive knowledge on my part, which I cannot communicate as such to you – there are *no rules* enabling us to check that the music generates "the same feeling" in both of us.

« 13 » Summing up: cognitive knowledge, as the term is used here, is based on *logical reasoning* of some kind, i.e., on argumentation using rules and procedures that can be agreed on; and knowledge derived from application of these rules can then be demonstrated and communicated by the knower to other individuals, and shared between them. On the other hand, non-cognitive – sometimes termed "affective" or "emotive" – knowledge deals with personal experiences that cannot be thus communicated and shared: emotion, volition, preferences, values, likes and dislikes, beliefs, etc.

« 14 » Next, the notions of *realism* and *relativism* require some clarification. It may be noted that these two terms appear with a wide variety of different meanings in the philosophical literature; here, I will only give a short description of how they are used in the present article, restricting ourselves to the subgenres generally denoted as *scientific realism* and *scientific relativism*. Briefly, I am taking them to describe different philosophical perspectives on the idea of *ontological truth*: realism asserts that objectively true propositions about the world exist, and can be identified by the knower; while relativism holds that the truth value of any proposition about the world is (and must be) subjective, depending on the context in which it is made, and that acceptance of this context will then depend on personal preferences of the knower (Quale 2007). Put in another way: realism assumes that objectively correct descriptions of phenomena in the world exist, and that it is in principle possible for human knowers (us) to discover these descriptions. Relativism, on the other hand, asserts that there are no such objectively true descriptions: any proposition about the world must reflect some knowledge possessed by a knower; and this knowledge is constructed by, and resides in, this knower – there is no "right way," independent of the knower, to perform such a construction, as described by the basic tenets RC_1 and RC_2 of radical constructivism.[8]

« 15 » This difference between the epistemic positions of realism and relativism in RC will be important in the discussion to follow below. It is one of the major issues on which RC deviates from the epistemology of traditional Western philosophy (Glasersfeld 1995). It is notable that this theory has become quite controversial, creating considerable discussion and heated argument in the academic discourse that addresses issues of epistemology – in particular, the epistemology of science. For the interested reader, I include references (see also footnotes below) to some of the contributors to this discourse: some such as Louise McCarty & Thomas

6| Note that "assume" is the operative word here. We cannot know with certainty what the other person is thinking.

7| Note that there is no implication here that we both "feel" or "experience" this shared knowledge (of Ohm's Law) in the same way – indeed, there is no way that we can check whether our feelings about this knowledge are the same. The sharing rests on the fact that we have both agreed to use the same rules (the mathematical theory and its application to concrete physical systems) and can then observe that we necessarily arrive at the same quantitative results.

8| Thorough and comprehensive philosophical treatments of these two topics may be found in the overview articles by Anjan Chakravartty (2014), addressing realism, and by Chris Swoyer (2014), addressing relativism.

Schwandt (2000), Peter Slezak (2000), and Gurol Irzik (2000) express strong reservations about RC, while others such as John Staver (1998), Leslie Steffe & Patrick Thompson (2000), David Geelan (1997), and myself (Quale 2007) are more in sympathy with it. A comprehensive introduction to the philosophical issues involved here may be found in the book by John B. S. Haldane & Crispin Wright (1993).

Religion vs. science

« 16 » What can one say about religion, from a radical-constructivist perspective? The short answer to this question is that religion belongs to the *non-cognitive* domain of our experiential world; hence the content of religious propositions cannot be communicated and argued cognitively. This short answer, however, while valid as far as it goes, does not capture certain important aspects of the issue. So, let us look at the matter in some more detail.

« 17 » In this target article, I will examine some aspects of the connection between religion and science. To start with, we note that the philosophical literature on this topic is vast, and the present discussion certainly does not pretend to give any extensive and deep account of the philosophy of religion. In particular, it does not address topics such as: religious rituals, solace and salvation of the soul, individual redemption, divine forgiveness of sins, and the promise of eternal life after death – religious issues that are of great emotive meaning and significance for believers. I will confine ourselves to addressing a few aspects that are of particular relevance in the context of RC.[9]

« 18 » First, the term "religion," as used here, needs some clarification: as we all know, there are very many different religious creeds around. Indeed, it is a fact that the major religions of the world have fragmented into a bewildering number of separate denominations. Thus, for instance, Christianity has split into a multitude of different churches: Roman Catholic, numerous versions of Protestant (Lutheran, Calvinist, Anglican, etc.), numerous versions of Orthodox (Greek, Russian, etc.), and many others; and similar subdivisions have occurred in other religions. So, we must ask: Is it possible to define some qualities or attributes that are common to all religions, and hence can serve to differentiate them from science, so that we can be justified in using "religion" as a generic term, in an epistemic and ontological context of RC (in particular, in a discussion of its possible conflicts with science)? In fact, some authors have raised the issue of whether it is even meaningful to speak of "religion" as a coherent entity that can be meaningfully defined. This is a strongly debated issue in the areas of philosophy and sociology of religion.

« 19 » I will propose two such qualities that are relevant in the present context. The first is the obvious attribute of assuming a *supernatural* aspect of the world: a religion will in general exhibit items that (it is assumed) cannot be fully described by natural science. In other words, a reality is postulated that lies "above" or "beyond" the natural world (hence the name "super-natural"), and is populated and governed by various agents – gods, demons, mystical forces, and so on – that do not obey the laws of nature that together constitute natural science as we know it. It is then generally asserted that this supernatural reality *exists*, in some absolute sense, and that the religion in question can reveal *true knowledge* of the supernatural manifestations of the world. For later reference, we note that this serves to locate the adherents of a religion firmly in the camp of epistemic realism; moreover, the purported knowledge – often referred to by its adherents as "revealed truth" – that can be gained of this supernatural reality will then be of the non-cognitive type.

« 20 » The second (and from our perspective, more important) attribute that characterises religion is that of a *design*. Like science, a religion will propose some particular account of the world: how it came about, how it is made up, and how it works. In short, it will offer an *ontological* description of the world. But, unlike science, a religion will generally ascribe a design to the world: in particular, concerning the position that man (i.e., the human species) occupies in it. Put in another way: in the religious conception, the world was designed and created in accordance with some plan. And this implies, in turn, that there must exist some kind of *designing power* out there, residing in the supernatural reality, that is responsible for this planning / designing and thus provides the ultimate explanation of why things are as they are. Note that this somewhat impersonal terminology is chosen deliberately: the designing power may, but need not, manifest itself as a supreme being with a personality – a God, as this term is generally understood. Another possibility is that it is manifest in the form of some disembodied and impersonal "ordering principles" that the world must obey – an idea that underlies much of ancient Chinese and Indian philosophy.[10]

« 21 » In particular, human beings have a place in this design: it directs us to behave in certain ways. Indeed, it can serve to provide a religious underpinning of *ethics*, as was discussed in (Quale 2014a): a proposition (or command) that people should conduct their lives according to whatever plan is inherent in their religion, *because* this is in accordance with the plan of the designing power that governs the existence and operation of the world.

« 22 » The viewpoint defended in the present article is that religions do, in fact, conform to this very general scheme: the world, with all human beings in it, owes its existence to a plan that is associated with a design of some kind. This design may derive from a personalised divine entity (a God, or several gods), as will be the case for the Abrahamic creeds. Or, it may be in the form of impersonal forces / principles governing the world, as e.g., in Buddhism or Taoism. This is to be contrasted with the worldview of *science*, which expressly rejects the idea that there is any such design.

9| For a perspective on other issues, see, e.g., Bertrand Russell (1961) for a classic reference, in particular the first chapter "Grounds for conflict," Anthony Wallace (1966) for a general introduction to the philosophy of religion, Angelo Corlett (2010) for a critique of Dawkins's argumentation, and Alvin Plantinga (1996) for a defence of religion against the critique of science.

10| It may be remarked that such disembodied "ordering principles" (as featured in, say, Buddhism) bear some resemblance to the (likewise disembodied) laws of nature, as offered by science. One major difference is that scientific laws do not imply any ethical position, whereas religious ordering principles may do so.

« 23 » However, the details of doctrine (i.e., the theology) will of course vary considerably between religions; a few examples will serve to illustrate this point. Thus, among the various kinds of religion that have appeared throughout human history, we find:

- *Animism*, where natural objects and phenomena, such as trees, rain and thunder, are imbued with some kind of animate soul or spirit. This is generally regarded as an early stage in the development of religion in human society; and in fact, elements of it still survive today, in the continual belief in *magic* of various kinds.
- *Polytheism*, with a pantheon of several gods, who together function as the designing power. Examples of this are: the old Egyptian, Graeco-Roman, and Norse mythologies.
- *Monotheism*, featuring only one God as the prime designer of the world. In this category, we find the so-called *Abrahamic* religions: Judaism, Christianity, and Islam.

« 24 » Furthermore, in the monotheistic Christian tradition of European philosophy one traditionally distinguishes between the doctrines of:

- *Theism* – God created the world, and still directs and controls all that goes on in it, according to His will. This indeed seems to be the view supported by most Christian churches today.
- *Deism* – God did indeed create the world; but He has since allowed it to run its course, governed by the laws of nature that were built into it in the act of creation, without any further interference from Him.
- *Pantheism* – God is regarded as being identical with the world, manifesting aspects of Himself in the phenomena that make up this world and the natural laws that govern it.

« 25 » A *religious belief* will then manifest itself in a knower (a believer) as a *knowledge* (conviction) held by her, asserting that the tenets of her preferred religion are objectively true.

« 26 » I would argue that it is precisely this attribute of design that is the main source of the disagreement – indeed, the incompatibility – that exists between Darwinism and creationism. It may be noted that there have been various attempts to reconcile the very different *time-scales* exhibited by the two theories: a few millennia for creationism vs. some billions of years for Darwinism. Thus, for instance, in the mid-19th century an idea was suggested that became known by the somewhat informal designation "Adam's navel." Simply put, it was proposed that God did indeed create the whole world some six millennia ago, as reported in Genesis, *but* that He then created it with a built-in past! One often-quoted example was that of Adam, the first man: having been created by God and thus not born by a woman, he nevertheless was assumed to carry evidence of such a birth, in his bellybutton. In other words: God had inserted into His world, at the moment of creation, all the fossil evidence that we presently observe in it; and in this way He has misled us into believing that it has a much longer history. This in effect served to divide history neatly into two partitions: history before the moment of creation (which never happened) and history after the moment of creation (which did happen). The idea seemed to be invulnerable to observational refutation, and was actually much discussed in its time as offering a possible way to reconcile the doctrines of Darwinism and creationism.[11]

« 27 » On the other hand, on the issue of design there can be no compromise or reconciliation! Creationism is explicitly based on the assumption that the world, and all the species that inhabit it, were created according to a plan and for a purpose intrinsic to an intelligent design (as it is often promoted nowadays). Darwinism, on the other hand, maintains that evolution is governed by the process of *natural selection* – a succession of many small steps of random mutations, all emerging and developing in continual interaction with their environments; here, there is definitely no room for any externally imposed plan or purpose, as imposed by an "intelligent designer" (such as a God). This point has also been forcefully made by von Glasersfeld (2008) referring back to Gregory Bateson's *Steps to an Ecology of Mind* (1972); here the Darwinian theory is explained in *cybernetic* terms, describing evolution as "the result of nature's restraints on the random variations of organisms." In other words, nature operates by *constraints* (as we would put it today), rather than on causal connections between interacting systems.

« 28 » Thus there is an inherent incompatibility between evolutionary science and Christian theology – at least, if the latter espouses creationism. Indeed, it may be argued that this constitutes just one particular example of the fundamental incompatibility that in general exists between *natural science* (of any kind) and *religion* (of any kind): A science will regard its domain – a given set of natural phenomena – as unfolding subject to impersonal natural laws, which together constitute a theory that describes the said domain; any kind of explanation of these laws in terms of purpose or intention is generally excluded. A religion, on the other hand, asserts as a fundamental premise that all phenomena observed in the world are designed, created and maintained according to an intention and for a purpose, by some sort of designing power. Or, in brief: science excludes an externally imposed design, while religion requires it!

« 29 » It is precisely this issue of design that lies at the origin of most of the conflicts that have arisen between science and religion. And it should be emphasised that the conflict is between different *ontological* perspectives: i.e., it derives from different comprehensions of how the world is made up. Also, as I will argue, the nature of the (potential or actual) conflict will depend on *epistemological* preferences: in particular, on whether one chooses to adopt the epistemic position of realism or that of relativism.

« 30 » Before going on, let us try to give a (necessarily very brief) account of how the term "ontology" is used in the present article. In the literature, this is often described in rather general terms, as "the branch of metaphysics dealing with the nature of being." Here I shall take it to denote a knower's perception of her own experiential world: How does she perceive this experiential world *to be* – what *exists* in it? I posit that every knower does indeed have a personal ontology, a feeling of what her world is like. In the context of the present article, this ontology might be probed by asking questions such as: Is there a God? Or is there not? How can we know – or can we? Or, passing

11 | For a thorough and entertaining account of this chapter in the philosophy of religion, see Gould (1985).

to more mundane areas of life: Does she like this particular book, or piece of music, or food? Does she love this particular person, or does she not? Will she vote for this particular political party, or for another – or will she vote at all? These are just a few examples of a plethora of questions, which together serve to chart the knower's ontology – i.e., her perception of her experiential world, and her position in it: who is she, and what is her position in her own experiential world?

« 31 » Note that such an ontology may, but need not, be assigned a *truth value* by the knower. For instance, a student of science will construct a scientific ontology: a perception that at least part of her experiential world is faithfully described by scientific laws. She may then adopt the point of view that this ontology is *true* knowledge – a correct description of "the way the world really is." Or, she may decide that said ontology, while presently giving a reasonably accurate account of observed data, will in all probability change and evolve with time; and there is no guarantee that it will ever approach, in some sense, a final true ontology. In this latter case, the ontology would be better described as *provisional*: "it works well now, so let us stay with it and try to improve on it." In this connection, it is worth noting that certain trends in Zen Buddhism in some other spiritual traditions explicitly emphasize that there is no "truth as such" – that all religious systems are merely models, and that all realisation of truth resides in the mind. From the point of view adopted here, these are to be regarded as "mystical philosophies" that do not fall within the scope of the present article.

Realism vs. relativism – some implications for religion

« 32 » The purported incompatibility between science and religion has been forcefully presented and discussed by the biologist Richard Dawkins, in his book *The God Delusion* (2006), which has attracted considerable attention and debate.[12] It should be said that much of its argumentation is directed against what Dawkins sees as the *moral corruption* of religion, with regard to both theological doctrine and practical implementation. This issue will not be addressed here; I shall focus on the part of Dawkins's reasoning that explicitly addresses *science*.

« 33 » Dawkins presents his argumentation from a position that one might call *monolithic realism*. The basic premise here is that science has the potential (in principle, at least) to explain the totality of our experiential world, with everything that is in it, by discovering and applying the laws that govern the processes of nature. In other words: there is, by assumption, nothing within the reach of our experience that is inaccessible to scientific reasoning. Hence, if religion is to have any truth value at all, its *supernatural* aspects must also be amenable to scientific investigation: that is to say, these aspects cannot in fact be "super-natural," in the original meaning of being "above nature." In particular, it must be possible to demonstrate scientifically the existence of the various entities and constituents that populate the realm of religion: God and the devil, angels and demons, Heaven and Hell, and so on. Moreover, it must be possible to show evidence of the purported powers of the supernatural beings, such as omniscience and omnipotence – for instance, the ability to perform miracles, by suspending the laws of nature! And Dawkins then argues, in considerable detail, that:

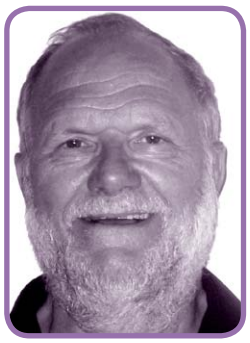
- such scientific verification of religious claims has never been achieved; and
- based on logical grounds, and on our knowledge of nature today, it is extremely unlikely that this will ever happen.

« 34 » Thus, when seen from this perspective of monolithic realism, there certainly is a conflict between religion and science: both claim to offer the *true* story about how the world is constituted, and it would seem that they cannot both be right – thus, for instance, Dawkins argues that the basic tenets of religion are based on scientifically unsound propositions and must therefore be factually wrong.

« 35 » It should be pointed out, however, that there exist more moderate varieties of epistemic realism, in which such a conflict is not so imminent. For instance, one might consider a position of *dualistic realism*, where the world is sharply divided into two domains: the *material world* of natural phenomena, which is subject to the laws of science, and the *spiritual world* of the supernatural reality, which is governed by esoteric "supernatural" principles of its own. These two worlds can both be experienced and known by human beings – in a cognitive and non-cognitive way, respectively – but the rules that hold in one world do not hold in the other, and hence there is no "conflict of rules" between them. Note, in particular, that such an ontological assumption would make religious propositions invulnerable to scientific arguments, thus "saving religion from science," as it were! In this way it is still possible to uphold the realist notion of *objectively true* knowledge; but such knowledge will then be of two different kinds, referring to either the material or the spiritual world. This appears to be, in essence, the stance adopted by the Anglican bishop John Robinson, in his celebrated and controversial book *Honest to God* (1963), where he outlines his views on what is left as the legitimate domain of religion; and one may surmise that this is in fact the epistemic position adopted by many scientists who also profess a religious faith.

« 36 » Now, I ask: How do these issues appear from the viewpoint of RC? Here the epistemic position is one of *relativism*; and this implies that the conflict between science and religion that was manifest above, as appearing from the viewpoint of (monolithic) realism, simply does not arise! Recall that a science is taken to be a *model*, constructed in order to address – often using mathematical terms and reasoning – specific questions about (some part of) one's experiential world; and the knowledge that is generated by this model then constitutes a *scientific ontology* in the mind of the knower. Similarly, a religion is considered to be just another kind of model, constructed to address other questions, and leading to knowledge constituting a *religious ontology* for the knower. There is no conception in RC that any one of these ontologies can be "true" in any meaningful sense, or even that one of them can be "more true" than any other; the individual knower may prefer to adopt one of them, or the other – or even both, should she be so inclined. In particular, a scientist may or

12| Note that this work, though it claims to present a general indictment of all religions, in fact concentrates its fire on the Abrahamic religions, and especially on Christianity.



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grew up in Norway and Australia. He studied mathematics and physics at the University of Oslo, graduating with a doctoral degree in 1974, with a dissertation in mathematical physics. He has taught extensively at college and university level in mathematics, physics and computer science. Between 1995 and 2005 Quale was first Associate Professor at the NKI Computer College in Oslo, then Associate Professor at the University of Oslo. In 2005 he retired. He has published a number of papers on science education, text books for upper secondary school level, and the book, *Radical Constructivism: A Relativist Epistemic Approach to Science Education* (2008).

may not choose to embrace a particular religious doctrine.

« 37 » However, this does raise an intriguing question: can a *radical constructivist* be genuinely religious – i.e., be a true believer in the doctrine of some definite religion? Here I would argue that the answer must be no! As noted above, the epistemic position of a religion is one of *realism*: Its supernatural aspects, and its doctrine of an externally imposed design, are presented as being objectively true; and the believers are obliged to accept this truth in order to be received into the fold. In other words, the believer does not have the option that is available in RC: to regard the religion simply as constituting a model, constructed by the individual knower to generate knowledge that is viable for her, though not necessarily for other knowers.

« 38 » So, I conclude that there does indeed seem to be a fundamental conflict between RC and religion – a conflict that derives from the epistemic incompatibility between the two in their conception of *ontological truth*. On the one hand, we have the notion of viably constructed scientific knowledge, which can in principle change continually with the appearance of new discoveries and technologies, as the construction proceeds in time: in other words, the fundamental tenets of science can always be questioned. On the other hand, there is the revealed truth of religious doctrine: here, questioning or suggestions of change tend to be regarded as apostasy – a rejection of the true faith. While over the course of time many details of religious doctrine have undergone considerable changes, this is of no consequence for the present argumentation. I am talking here about religion as it will appear to the believers at any particular time: it is then generally presented – or, more appropriately, preached – as being *absolute truth*, and not to be questioned by the congregation! In simple terms, then: the epistemology of radical constructivism is relativist, while that of religion is realist, and no union between the two appears to be feasible.[13]

« 39 » This offers a new perspective on the old dichotomy of *atheism vs. agnosticism*. These may be described as different positions that can be taken, on the question of whether a God exists – and thus, by extension, whether the religion supporting this God is true. In popular parlance, an atheist is a person who claims to *know* that God does not exist, while an agnostic is one who keeps an open mind on the issue, admitting that she simply does not know, but granting the possibility that maybe He does exist. Note, however, that it is then usually assumed that the question must have a definite answer, at least within an epistemology of realism. In the words of Dawkins:

> "Either He exists or He doesn't. It is a scientific question; one day we may know the answer, and meanwhile we can say something pretty strong about the probability." (Dawkins 2006: 70)

Indeed, the general tone of Dawkins's argument is well illustrated by the title of chapter four in his book: "Why there almost certainly is no God." In other words, both the atheist and the agnostic will argue their case, concerning the possible existence of God, within an epistemology of *realism*.

« 40 » In a *relativist* epistemology such as that featured by radical constructivism, on the other hand, the purported "existence of God" cannot be considered as an objectively true or false notion, and the dichotomy consequently falls apart. Here, any knower will construct her own individual knowledge; and if it should feature a God, then she is a believer, as this term is commonly understood. On the other hand, if this knowledge does *not* feature a God, then the whole idea of a God will of course have no meaning for her. But this does not mean that she "knows that God does not exist" (as the atheist might say), only that the conception of a God does not enter into her present ontological knowledge base. Nor is it relevant for the knower to declare "an open mind" (as the agnostic might put it) on this question – except in the somewhat trivial sense of acknowledging that she cannot predict, at the present time, where her own learning process (i.e., the construction of her own personal knowledge) may take her in the future. In short: she can, at any particular instant of time, know only what she does in fact know at this time – with no guarantees given concerning which conclusions and knowledge she may or may not arrive at later. Thus the question of whether she is an atheist or an agnostic has no meaningful answer.

13| One could perhaps imagine some kind of "tolerant religion" that accepts an attitude of ontological relativism: i.e., accepts the believers' freedom to construct their own individually viable truth values for doctrinal propositions. No such religion is known to me.

Conclusion

« 41 » A knower's individually constructed knowledge about her own experiential world will, at any one time, inevitably contain both cognitive and non-cognitive elements; together, these two form what might be called her total *store of knowledge*. Scientific proposition are cognitive, and hence open to rational argumentation and experimental confirmation or refutation.[14] On the other hand, religious propositions are non-cognitive; and hence, in an epistemic context of RC, their truth value cannot be argued (debated, defended, refuted, etc.) in cognitive terms. So, I conclude that there is no meaningful arena of interaction or discourse between these two types of ontology: a scientific vs. a religious world view. One consequence of this is that there seems to be no call for an RC-based *criticism* of religious propositions, since such propositions do not (and indeed cannot) enter into an RC ontology, as has been argued in some detail above.

« 42 » On a more detailed level, two results emerge from the discussion above:

« 43 » First, the fundamental relativist ontology that is inherent in RC is incompatible with the realist ontology underlying any religious belief: the conviction that the religious base underlying this belief describes *objective truth*. As a consequence of this, a radical constructivist cannot be religious – i.e., a believer in the ontology that is postulated by any particular religion.

« 44 » Second, in the relativist context of RC the terms *atheism* and *agnosticism* become meaningless, or at least irrelevant. Both these terms carry, as an implicit assumption, the fundamental realist premise that it is meaningful to speak of a religious ontology as being objectively true or false. In the relativist epistemology of RC it is not meaningful to speak of a proposition as being objectively true or false, whether it addresses issues of religion or not. Thus, a radical constructivist cannot honestly claim to know that God does not exist (the atheist position), or even to keep an open mind as to whether He exists (the agnostic position). All she can conclude is that God has presently no place in her own constructed reality – i.e., her view of how the world is constituted.

14| Note that this refers to propositions of *natural* science.

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Open Peer Commentaries

on Andreas Quale's "Religion: A Radical-Constructivist Perspective"

The Interesting Similarity of Religious and Everyday Epistemic Positions

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> Upshot • Quale argues that radical constructivism and religion are incompatible: a believer must necessarily be a realist, while radical constructivism, with its fundamental relativistic epistemology, can neither confirm nor deny religious beliefs. In the commentary, I first question Quale's distinction between cognitive and non-cognitive knowledge, especially from the point of view of the discussion of religious beliefs. Later on, I follow his argumentation of the epistemic position associated with religious belief and point out that Quale's conclusions could be extrapolated, presenting a basis for an interesting and relevant discussion about the split between the everyday and the constructivist epistemic positions.

Are religious beliefs genuinely non-cognitive?

« 1 » Even though I disagree with Andreas Quale on certain points, his target article as a whole opens up exciting new horizons. Thus I start with a critical comment, while in the next chapter I present some starting points for a discussion that might ensue from Quale's arguments.

« 2 » In order to look at religious belief from a constructivist point of view, Quale introduces the notions of cognitive and non-cognitive knowledge. For him, cognitive knowledge is that which is "based on *reasoning* of some kind, using rules and procedures that can be agreed on between knowers," while non-cognitive knowledge

> "deals with personal experiences that cannot be so demonstrated or communicated: here there simply are no commonly accepted rules of reasoning to agree on! Such knowledge will include such categories as: emotion, volition, personal preferences, values, likes and dislikes, belief, etc." (§8).

Quale compares this distinction to a similar pair: explicit and tacit knowledge. I propose that it might be more adequate to use another binary opposition, such as inner and outer or subjective and objective. Related to this, Michel Bitbol & Claire Petitmengin

paraphrase neo-Kantian philosopher Paul Natorp (1912), who gave a detailed account of how these oppositions arise from a non-undifferentiated continuum of experience:

> "[O]bjectivation comes first, and subjectivation arises as the by-product of the former. Objectifying means picking out the component of experience that remains invariable across personal, spatial or temporal situations; or at least the component of experience that varies in the same way (i.e., in a law-like way) irrespective of the personal, spatial or temporal situations. The 'subjective' domain is then marked off by contrast and difference with the objectified part of experience. It includes whatever is left in experience after the objective domain has been delineated." (Bitbol & Petitmengin 2013: 178)

« 3 » We can see that such an explanation of the inner / outer split is perfectly in line with constructivist theory: it does not at any point pre-judge as to what causes the stability and invariance of given parts of the experiential field. With this, it is also quite obvious that the line separating both areas is not fixed. According to Natorp, the domain he designates as subjective develops and changes according to the process of objectification. The larger the part of experience that is being objectified, the smaller the subjective one. Such a division is also in accordance with Quale's insight that non-cognitive (or rather inner) knowledge is much harder to describe (if at all possible), and even harder to validate along rational and intersubjective criteria.

« 4 » In his article, Quale focuses particularly on two "determining characteristics" of religion: supernaturality and design (§2). Quale claims that both of these belong to the domain he designates as "non-cognitive." I see this as rather problematic. Regardless of the name given to the cognitive / non-cognitive pair (I would rather call them "inner / outer distinction"), it is hard to envisage why these characteristics should necessarily fall under "non-cognitive" (or "inner"). Quale describes such knowledge as "'affective' or 'emotive'" (§8). It is unclear whether concepts such as intelligent design actually belong to this domain.

« 5 » The definition of the cognitive domain as "using rules and procedures that can be agreed on between knowers, and thus demonstrated and communicated (say) from teachers to students" (§8) could easily also be applied to religious teachings such as the concept of creation. The myth of creation or the idea that the world is a result of an intelligent designer is – as pointed out by Quale – part of various religious scriptures, teachings, and beliefs. Descriptions of creation, which beside the central idea also include religion-specific details, are usually transmitted verbally from teacher to student.

« 6 » Since this is part of a religious dogma, believers are by definition not supposed to question its credibility. This however does not yet mean that this concept cannot at all be rationally analysed, cognitively argued, or discussed (as demonstrated by numerous discussions of this topic, among them also Richard Dawkin's book quoted by Quale). By way of example, let us imagine that archeologists discovered an unexpected, strange, pyramid-shaped hill in the jungle. There is no reason why they would not start collecting evidence to determine whether this formation is the result of human creation or of natural forces. This example could be expanded to apply to the entire universe. Admittedly, in that case, it would be much less clear what the evidence to support either of the claims might be. While there is certain probability that we might be unable to reach agreement about it, this does not yet imply that it cannot be rationally discussed. The creation myth is a form of explanation of the origin of the world. For this explanation to be adequate, it has to be *rationally* adequate – otherwise it is but a new name for an old mystery. It is important not to confuse the fact of there not being much evidence to support a creation myth with the impossibility of existence (of such evidence). Lack of evidence in this case does not necessarily imply the non-cognitive type of knowledge but more likely that the explanation in question is a bad one.

« 7 » The same could be said of supernaturality. "[A] religion will in general exhibit items that (it is assumed) cannot be fully described by natural science" (§19). From a scientific point of view (as elaborated in Dawkins 2006), the question is how to describe nature in its entirety. If such "supernatural items" whose existence can be adequately described are found, then the mission of science is simply to expand the current paradigm and prepare appropriate models to include new data. The mere belief that there exist certain events that are supernatural cannot itself be categorized as knowledge (or at least not a new, different kind of knowledge). As stated above, such "knowledge" is no more than a mere name for certain experiential events from the life of a believer that can serve either to pacify or to trigger awe; it has no explanatory value in itself. The problem with this type of "explanation" is not that (as constructivists) we are unable to argue against them, but rather that they put a stop to any further discussion or research.

« 8 » The concept of supernaturality could, however, have one other meaning – that of a special type of expanded awareness that opens up the possibility for contact with experiential worlds or inner forces that are unreachable in the normal state of consciousness and cannot be rationally described. Such experience could be the result of either persistent introspective research or momentary insight and could as such definitely be included into the non-cognitive category. Unfortunately, the author gives up discussion at this point (Quale mentions certain doctrines that claim "that all realisation of truth resides in the mind. From the point of view adopted here, these are to be regarded as 'mystical philosophies' that do not fall within the scope of the present article," §31). I believe it is precisely in this area, described by William James (2009) with the broad term *religious experience*, where examples of religious non-cognitive knowledge might be found.

« 9 » Coinciding with Quale's definition of non-cognitive knowledge, one of the four main characteristics of religious experience as described by James is ineffability. Perhaps an even more interesting characteristic (according to James 2009) is the so-called *noetic* quality – a strong feeling that the experience brings new and very important knowledge, often not only about the person experiencing it but about the world, the universe, and the laws governing our lives. The feeling of mystical experience is a feeling of absolute knowledge, the feeling that what we have learned is undoubtedly true (e.g., existence of God, his absolute goodness, the feeling of interconnectedness of all living things, etc.); "and something in you absolutely knows that that result must be truer than any logic-

chopping rationalistic talk, however clever, that may contradict it" (Mounce 1997: 106).

« 10 » This feeling of absolute knowledge cannot be a reflection of any epistemic position other than realism in the strongest sense of the word. This brings us to Quale's important observation that any believer must almost necessarily be a realist.

Private realist vs. philosophical constructivist?

« 11 » Quale notes that a "*religious belief* will then manifest itself in a knower (a believer) as a *knowledge* (conviction) held by her, asserting that the tenets of her preferred religion are objectively true" (§25). The author's conclusions are: a believer must necessarily be a realist and as "a consequence of this, a radical constructivist cannot be religious – i.e., a believer in the ontology that is postulated by any particular religion" (§43). Later, Quale points out that atheism and agnosticism are meaningless from the point of view of radical constructivism since "both these terms carry, as an implicit assumption, the fundamental realist premise" (§44).

« 12 » Here I would like to argue that while this claim might apply to atheists, i.e., those who believe that there is no God (and thus demonstrate a clear position of belief in the possibility of knowing objective reality), I cannot fully agree that agnostics belong to this same category. This might be an issue of personal interpretation of radical constructivism: I see the constructivist position as being agnostic to (any) kind of ontology, rather than denying it. Ernst von Glasersfeld's (1995) finding that the function of cognition is adaptive, and serves the subject's organization of her own experiential world, not the discovery of an objectively given reality, does not imply anything at all about objective reality itself. The fact that the function of cognition is not to gain knowledge about reality *an sich* but rather to organize my experiential world does not in itself imply that knowledge about reality is impossible. Once understood this way, radical constructivism manifests itself as a position of openness, a position of "I don't know," and this is exactly how I see the agnostic position in relation to the question of the existence of God. It is quite interesting that from this point of view, both a firm believer and an adamant atheist appear to pertain to the same side of the spectrum – both are in the position of being certain. The constructivist's and agnostic's positions, as I see them, appear to be more modest; they seem to be positions of accepting uncertainty. In contrast, the realist's (and believer's) position seem to be in function of abolishing this very uncertainty.

« 13 » Related to this, Quale's discussion of different epistemic and ontological perspectives also led me to pose the question: Is it at all possible to adopt fully the constructivist position? Even if detailed philosophical analysis brings us to realise the soundness of a constructivist epistemic position, the everyday attitude of my conscious life is incessantly telling me that any perception I have is a perception of something out there and that that which is out there is real. My everyday personal epistemic position is thus realistic. Edmund Husserl (1982) called this default mode of our consciousness the *everyday* or *natural attitude*.

« 14 » Everyday experience is marked by an undoubted conviction that the world that (and as) I see is objectively real. This is common to both everyday and religious experience – each is accompanied with a strong feeling of self-evident truth, so strong and convincing that mostly we do not notice it at all. The bracketing of the natural attitude is a very demanding skill in fighting against the natural attitude of consciousness. The special conscious gesture necessary to achieve this was designated by Husserl as *phenomenological reduction*. In a way, radical constructivism performs a similar act: it brackets the non-reflected acceptance of the self-evidence of the natural attitude that is typical of realism. Despite the fact that the position of being an observer of an objective (observer-independent) reality gives us a strong feeling of solidity (as such, it is probably essential for the preservation and organisation of the experiential world), constructivism dares to doubt it – not in the solipsistic sense of denial, but rather in the agnostic sense of not knowing.

« 15 » Similarly to the act of giving up acceptance of a religious dogma, the act of moving away from this self-evidence makes the constructivist turn back to herself – no longer an independent observer (or in the words of Heinz von Foerster, a discoverer), she rather becomes an active participant in the process of the emergence of the world – an inventor (Foerster 1991). Such extrapolation of Quale's propositions lays down a starting point for a discussion of a circular, maybe even paradoxical intertwining of these two positions marking the constructivist's life: the personal everyday epistemic position of the discoverer and the theoretical, reflected position of the inventor.

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The Cognition of Religion: Radical-Constructivist Considerations

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> Upshot • The aim of this commentary is to examine whether religious belief is a cognitive activity. It is proposed that religious belief can be the result of cognitive processes individually construed and constructed upon layers of prior experience, thus adhering to the fundamental tenets of radical constructivism. However, a distinction should be made between cognizing religious beliefs and religious experience. The use of the science versus religion dichotomy is explored and relegated to the status of a "phoney war."

Tell me the truth

« 1 » Andreas Quale raises a number of important issues, that have been done before: the conflict between science and religion (§§1, 16f), citing Frederick Ferré (1967) as to whether one can speak of religion as a coherent entity (§2); whether religious belief is cognitive or non-cognitive, i.e., subject to logical reasoning (§13); and

the issue of realism vs. relativism (§32f). These issues are unresolved in that a single definitive answer to each issue is elusive and that first a consensus is needed on what is meant by "religious belief" itself. Religious belief can be construed as a personally constructed system of relatable micro-systems, interacting with other cognitive systems in varying degrees. Such personally constructed systems can be explanatory frameworks that serve to provide purpose to events or experiences, or can be individual spiritual beliefs not systematised in any particular way. Humans find purpose-based explanations (PBEs) attractive or attention-acquiring. Scientific explanatory frameworks (SEFs) may be bypassed by religious explanatory frameworks. This is because SEFs have arisen relatively late in human history while earlier theistic PBEs have been around for a long time and have co-evolved with human civilization. SEFs also suffer from an epistemological conundrum. Science claims to work objectively for the resolving of problems through hypothesis testing to provide best-fit explanations for observations. And yet science is sometimes portrayed as the search for "truth." Truth is not a "best-fit" explanation if it is thought of as an external reality, objective or not. If indeed science works to provide tentative best-fit explanations that are superceded by ever-improving hypotheses, then the economy of human cognition might find science intellectually "wasteful."

The cognitive basis of religion

« 2 » It is important to make a distinction between religious – spiritual – experience and religion per se. Long ago, Abelson (1979: 355) declared the use of the term "belief system" to be highly confusing since psychologists, political scientists and anthropologists used the term in rather different senses, making it fruitless to try to come to a consensus on the definition of that term. In work with elementary science teachers, McCloughlin, Kallery & Psillos (2015) and McCloughlin, O'Reilly & Kallery (2007) explored whether the idea that educators religious conviction or pseudoscientific belief, are related in some way, or contribute to, poor scientific understanding. They took as their starting point that belief can be defined as the mental acceptance or conviction of the truth or actuality of some idea (Schwitzgebel 2010). In addition, an important review of the cognition of belief (Connors & Halligan 2014) concurred with a number of analytic philosophers' assertation that belief is a "propositional attitude:" as a proposition, it has a specific meaning that can be expressed in the form of a sentence; as an attitude, it involves a mental stance on the validity of the proposition (Schwitzgebel 2010). Beliefs thus involve at least two properties: (i) representational content and (ii) assumed veracity (Stephens & Graham 2004). In this work, I emphasize the representational content, which I propose as cognitive. Michael Connors and Halligan (2014) note, however, that beliefs need not be conscious or linguistically articulated, and that to them, beliefs thus typically describe:

> "enduring, unquestioned ontological representations of the world and comprise primary convictions about events, causes, agency, and objects that subjects use and accept as veridical." (Connors & Halligan 2014)

« 3 » Beliefs are significant both because they are held by us to be veridical and because they provide the basis for us to understand the world and to act within it, i.e., PBEs. Beliefs provide the "mental scaffolding" for appraising the environment and explaining new observations, but also co-constructing a shared meaning of the world within a given cultural setting. This then constrains our understanding of beliefs in a particular cultural setting. Beliefs allow us to interpret and appraise our ongoing experience, and to place our experience within a wider meaningful context involving the past and future; as such, beliefs can have significant emotional consequences (Connors & Halligan 2014). Beliefs also provide a basis for action by providing both a representation of the environment and a framework of goals and actions (Connors & Halligan 2014) Furthermore, the interdisciplinary Explaining Religion (EXREL) project at the University of Oxford concluded that religious belief is a universal human phenomenon that has itself evolved but importantly has a cognitive component – see, for example, the work of Scott Atran (2007a, 2007b) and Harvey Whitehouse (Whitehouse 2008; Whitehouse & Laidlaw 2007) in this regard.

The phoney war

« 4 » In §1, Quale claims that "there have been many conflicts between religion and science." If this were indeed the case, one could then speak of a war between science and religion; however, aside from the specific examples of "singular ontogenesis" and heliocentrism – numerically a small number of "battles." The war is more methodological, as illustrated by the authors cited by Quale, namely Stephen Jay Gould (1985) and Richard Dawkins (2006). What is interesting about this choice of examples is that Gould and Dawkins differed fundamentally on their understanding of evolution and, importantly to this work, on the social function of science, to the point of open and public acrimony (Sterelny 2001: 3). The key term in Dawkins's approach to evolution is "design" (§§26f.) – by evolution as opposed to a designer – which emphasizes the success of evolution through fitness; whereas the key term in Gould's approach to evolution is "extinction" – which emphasizes the trials of life-forms, the numerous dead-ends in evolution and that survival is often a matter of chance (Sterelny 2001: 12). This vignette also highlights how science does not agree with itself and at least two competing ideas may co-exist at any time. However, their differences are exacerbated by their different assessments of science itself (ibid: 13). According to Dawkins, science is a complete system and contains "truth;" however, to Gould, the humanities, history and even religion offer insight into the realm of value, which is independent of any possible scientific discovery (ibid: 13). As such, Dawkins is a positivist in the Popperian mould (ibid: 123); Gould, on the other hand, acknowledges that scientific attempts to explain human behaviour have typically been flawed and that many questions remain, even in evolution. Rather, if there is a war between science and religion, it would be about the means of acquiring knowledge or understanding. Religious experience is often unexpected, possibly dissonant, and may or may not evoke affective responses. The person experiencing it constructs an understanding of the experience with reference to prior knowledge. But the "revealed truth" (§19) allegedly imparted to a believer has to be qualified by the idea that most religions claim that the deity is unknowable.

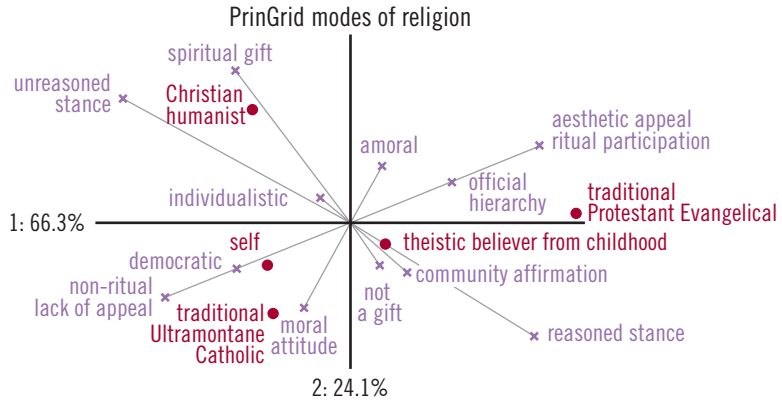

Figure 1 • A principal components plot in RepGrid 5 of perceptions of modes of religion as seen by one individual. Constructs in mauve; elements in red.

No two people may experience the same event in the same way – in fact, each person experiencing may be alone in their experience given the same physical environment. Scientific experience results from observations made without recourse to emotional referents, possibly involving hypothesising without bias and seeking to experiment or "tinker with reality" to affirm or restructure the hypothesis. Ultimately, religion and science are not there to answer the same questions, even if the questions concern the same context.

Religion as personally constructed reality

« 5 » If thoughts, whether perceptions or beliefs, are personally constructed, they can then be represented externally to the believer by a system of psychology termed personal construct psychology (PCP) or psychology of personal constructs (Kelly 1992). In such a system, the constituent components of a perception are elicited. Current research by the present author suggests that different modes of religiosity – a phrase employed by Harvey Whitehouse (Whitehouse & Laidlaw 2007) that I have explored in terms of how believers utilize different cues or self-perceptions of belief – have some of these constituent components: reasoned stance, spiritual gift, moral attitude, individualistic, ritual participation, aesthetic appeal, and response to official hierarchy. George Kelly's PCP affords a means to relate cues to roles. Traditionally, in clinical psychology, PCP employs a lengthy interview strategy to arrive at a set of integers which are ratings or ranks of "constructs" – polar axes based on the cues provided – against a describing or defining entities called in PCP "elements." In this research, we provide axes from a shortened interview format using triadic sequencing, typically of the form: "given three roles, which is the odd one out." Having ascertained an "odd one out," the interviewer asks for a reason and this becomes the end or pole of a construct. In one such study, a number of such "interviews," were obtained whereby participants considered elements against different constructs in terms of relevance / agreement, using the software package RepGrid 5 (Gaines & Shaw 2009). In this particular package, the "constructs" were derived as follows:

reasoned stance – unreasoned stance
spiritual gift – not a gift
moral attitude – amoral
individualistic – community affirmation
ritual participation – non-ritual
aesthetic appeal – lack of (aesthetic) appeal
democratic – official hierarchical

Although the axes are polar, this does not necessarily mean that they are opposites; rather, they are alternative perspectives. In vernacular parlance, the word "spectrum" might be appropriate as the position of the element on the pole of the construct illustrates the strength of the relationship between them. The elements were simply a selection of denominations taken from a larger list of significant people in the believer's life history. Five were derived as follows in the case of one individual:

- Traditional Ultramontane Catholic
- Traditional Protestant Evangelical
- Christian humanist
- Theistic believer from childhood
- "Self"

« 6 » The result of this interview is a matrix of n elements $\times$ m constructs. Typically, though not exclusively, PCP transforms the $n \times m$ matrix into a list of "principal components" as a means of reducing data but without losing the richness of the data. The principal components may then be plotted onto a Cartesian plane, as shown in Figure 1, with a variance within the first two components of 90.4%. Variance in this system is a indicator of validity, and a score higher than 75% is considered "valid."[1] Interpretation of the plot is done by examining the Euclidian distance between the constructs (in blue) and the elements (in red) – the closer two entities are to each other, the more influence on or relevance to each other they have. Figure 1 can indicate a variability in the cognitive component of religions. A small sample of "religions" is viewed here, along with the self-reflexive aspect. However, the aspect seen clearly here is the lack of a finite external objective reality; rather, there is a competing array of influential aspects that vary through the course of one's life. One of the things that religion attempts is for the participant to "reflect" on self, at various levels. This ultimately involves meaning-making, again a cognitive process. Figure 1 is a representation of Kellyan space – a result of Kelly's geometry of psychological space (Kelly 1992: 46). There are, of course, some unexpected outcomes within a personal construct system as represented in Figure 1. We might have expected "official hierarchy" to feature highly in the perception of the traditional Ultramontane Catholic – it does not, but rather moral attitude does. This is a feature of a system that involves the interrelatedness of all the data. Other similar attempts at such representational frameworks tend to be selective of the data. However here, the complete richness is preserved.

1| McCloughlin T. J. J. & Matthews P. S. C. "The optimum variance for the validity of principal components analysis in the RepGrid test." In preparation.

Conclusion

« 7 » As we now know, many scientists do involve their affective domain in channelizing experiments, evoking creative expressions to invent new ideas. And the overall scientific project is perhaps not best represented by such a selection of scientists. Similarly, many religionists throughout history have tried to apply logical reasoning to their beliefs, to the Christian philosophical project, for example. This activity is highly cognitive, and led to Platonic philosophy being incorporated (via the ancient writers Origen, Proclus and Plotinus) into Christian theology, especially in terms of the concept of "participation," distinguishing between we the participants and a deity in whom we participate (Perl 2007: 20). Religion is also not best represented by a selection of priests, imams, rabbis, preachers, etc., as these are specialized representatives who may themselves wrestle with the disjoint between an official construct and their own construals. Both domains suffer because of vitriol and internal conflicts. Interestingly, many religionists are scientists and vice versa; as McCloughlin, Kallery & Psillos (2015) and McCloughlin, O'Reilly & Kallery (2007) show, it cannot be assumed that such a dual activity leads to conflict or a diminution of one over the other. The fact that religion is highly variable even within one faith community suggests that religion may be ameliorable to some form of radical constructivism since outside of the primitives of a particular faith, highly individualized representations of beliefs exist at the unitary level. Finally, the current work, from a PCP perspective, suggests that the belief system of a believer exhibits an observeable structure not given to extreme polarities in their psychological space, suggesting a cognitive basis for their belief.

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Can a Radical Constructivist Be Religious? – Yes!

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> Upshot • The first of my three main goals in this commentary is to demonstrate that Quale's radical separation between cognitive and non-cognitive knowledge is not viable. The second is to establish Quale's assertion that a radical constructivist cannot be genuinely religious is a result of taking radical constructivism and religion as abstracted first-order models and is a result of comparing and contrasting elements of these models. The third goal is to establish how religious radical constructivists establish relations between their religious beliefs and their radical constructivist beliefs. To accomplish the first goal, I appeal to the work of Damasio to establish that what Quale refers to as "non-cognitive knowledge" is inextricably cognitive. I also appeal to the work of both Damasio and von Glasersfeld to demonstrate that the Cartesian duality between mind and body is not viable. To accomplish the last two goals, I make a distinction between first- and second-order knowledge and contrast Quale's argument that a radical constructivist cannot be religious with the relation between religious beliefs and radical constructivism from the perspective of actual religious radical constructivists.

Cognitive and non-cognitive knowledge as first-order knowledge

« 1 » In a previous article, Andreas Quale (2014a) made a distinction between cognitive and non-cognitive knowledge similar to the one he makes in the current target article. Although I find the distinctions that he makes between these two kinds of knowledge in the target article more acceptable, his distinction seems to separate these two kinds of knowledge more radically than I believe is warranted. In my commentary to Quale's (2014a) previous article, I explained why I consider non-cognitive knowledge as concepts. In doing so, I used Ernst von Glasersfeld's explanation of a concept:

> "'concept' refers to any structure that has been abstracted from the process of experiential construction as recurrently usable, for instance, for the purpose of relating or classifying experiential situations. To be called 'concept' these constructs must be stable enough to be re-presented in the absence of perceptual input." (Glasersfeld 1982: 195)

« 2 » In his Author's Response to the commentaries, Quale (2014b) agreed that what he calls "non-cognitive knowledge" could be considered as concepts. But he also asserted that these concepts are not cognitive concepts. The distinction that he makes in the present target article between cognitive and non-cognitive concepts resides in what he refers to as the "truth value" of a concept and appeals to logical reasoning as a basis for establishing it:

> "cognitive knowledge, as the term is used here, is based on logical reasoning of some kind, i.e., on argumentation using rules and procedures that can be agreed on; and knowledge derived from application of these rules can then be demonstrated and communicated by the knower to other individuals, and shared between them." (§13)

« 3 » Further, Quale uses scientific realism and scientific relativism in further clarification of his concept of the truth value of a scientific proposition:

> "I am taking them to describe different philosophical perspectives on the idea of ontological truth: realism asserts that objectively true propositions about the world exist, and can be identified by the knower; while relativism holds that the truth value of any proposition about the world is (and must be) subjective, depending on the context in which it is made, and that acceptance of this context will then depend on personal preferences of the knower." (§14)

« 4 » To exemplify what he means, Quale uses the example of electromagnetism:

> "This is *cognitive* knowledge, dependent on rules that can be communicated from me to you. And it is then *shared* between us, in the following

sense: if we both agree to abide by the rules (here as given by Maxwellian electrodynamic theory), I can take any particular piece of this knowledge, deduce various consequences from it, and check that you will indeed arrive at these results using the same procedures that I have used." (§12)

« 5 » Quale seems to interpret knowledge in physics in a way compatible with how Gabriel Stolzenberg interpreted mathematical knowledge: as invented by human beings rather than discovered. Stolzenberg's contention is, according to Paul Watzlawick, "one of the most fascinating aspects of [his] essay" (Watzlawick 1984: 254). However, although Stolzenberg believed that mathematics is invented, unlike Quale, he rejected any kind of relativism:

"when I stress the importance of standpoint, I am not preaching any brand of relativism. I do not say that there is your truth and my truth and never the twain shall meet." (Stolzenberg 1984: 260)

In taking this position, Stolzenberg was basically concerned with first-order mathematical knowledge of mathematicians. More generally, first-order models are the models an individual constructs to organize, comprehend, and control his or her experience (Steffe et al. 1983: iv). Although I believe that Quale would not agree with Stolzenberg's rejection of relativism, I do interpret Quale's comments on Maxwell's electromagnetic field equations, and on cognitive knowledge more generally, as pertaining to first-order cognitive knowledge. I also interpret Quale's comments on non-cognitive knowledge as referencing first-order knowledge:

"non-cognitive knowledge – sometimes termed 'affective' or 'emotive' knowledge – deals with personal experiences that cannot be so demonstrated or communicated: here there simply are no commonly accepted rules of reasoning to agree on! Such knowledge will include such categories as: emotion, volition, personal preferences, values, like and dislikes, belief, etc. One important example of non-cognitive knowledge is, as will be argued below, that offered by *religion*." (§8)

« 6 » In the case of both kinds of knowledge – cognitive and non-cognitive – there is an acknowledgement of a knowledgeable other. But second-order knowledge – the models observers may construct of the observed person's knowledge (Steffe et al. 1983: xvi) – remains implicit and unarticulated. As a result, I argue that Quale's distinction between cognitive and non-cognitive knowledge is subject to what Stolzenberg (1984) called a "trap," which is a:

"[c]losed system of attitudes, beliefs, and habits of thought for which one can give an objective[1] demonstration that certain of the beliefs are incorrect[2] and that certain of the attitudes and habits of thought prevent this from being recognized." (Stolzenberg 1984: 260)

Cartesian duality between mind and body

« 7 » Although Quale considers the kinds of non-cognitive knowledge that he alludes to in his target article as concepts, it does seem as if his separation between cognitive and non-cognitive knowledge is compatible with the Cartesian duality between mind and body – "I think, therefore I am" (Damasio 2005: 248). Descartes's statement does, according to Antonio Damasio, suggest that,

"thinking, and awareness of thinking, are the real substrates of being. And since we know that Descartes imagined thinking as an activity quite separate from the body, it does celebrate the separation of mind, the 'thinking thing' (*res cogitans*), from the nonthinking body, that which has extensions and mechanical part (*res extensa*)." (Damasio 2005: 248)

« 8 » Although von Glasersfeld made a distinction between "I think, therefore I am" and "I am aware of thinking, therefore I am," he did seem to agree with Damasio's suggestion about the Cartesian duality in the following passage:

"[T]he first person [the 'I'[3]] is assumed to be a constructor of knowledge. Thus the question arises whether the active agent, the 'subject' that is supposed to reside in this first person, can spontaneously construct knowledge of him- or herself. It has often been said that it cannot, and that the self-knowledge arises only from interaction with other persons." (Glasersfeld 1995: 121f)

« 9 » Both authors seemed to agree that Descartes's duality introduced the possibility that the "subject" could construct knowledge of him- or herself independently of experience or perception. In consideration of what Descartes meant by "I am," or "to exist," however, von Glasersfeld made it clear that Descartes considered space and time as absolutes and that "to exist" meant to occupy a position in this frame of reference. In that von Glasersfeld considered space and time as constructions, he reinterpreted Descartes statement as, "I am aware of thinking, therefore I am":

"To my mind, it is precisely this awareness of what one is doing or experiencing that is the foundation of what we ordinarily call our *self*. It does not have to be thinking in any elevated sense. If you are becoming aware of tying your shoe laces, you also become aware of the fact that there is a you who is doing it." (ibid: 122)

« 10 » Von Glasersfeld further elaborated that,

"In the constructivist view, the self we conceive, as well as its body, are necessarily the product of the active agent that Wittgenstein called the 'I' that is not part of the world. Whatever the otherworldly part of the self builds up is gauged according to its viability in experience." (ibid: 123)

« 11 » If the self is not part of the world, the question immediately arises concerning aspects of the self that are part of the experiential world. Von Glasersfeld answered this question in the following way:

"Instead of asking what the self is in the philosopher's sense, one can ask how we experience our self. This does not concern the mysterious entity that does the experiencing, but focuses on the tangible structure, the body that is experienced as one's own. Such an investigation takes the mysterious self-conscious entity for granted and proceeds to examine how the entity comes to recognize itself both as agent and as percept distinguished from the rest of its experiential field." (ibid: 123)

1| For a constructivist, "objective" would be deleted.

2| For a constructivist, "not viable" would be substituted for "incorrect."

3| Added for clarity.

Rejection of the Cartesian duality

« 12 » Von Glasersfeld's re-interpretation of Descartes's statement is essentially a rejection of the separation between mind and body that it implies.

"This is Descartes' error: the abyssal separation between body and mind […] Specifically, the separation of the most refined operations of mind from the structure and operation of a biological organism." (Damasio 2005: 249f)

« 13 » Damasio does not regard mind as in the body. Rather,

"[w]hat I am suggesting is that the mind arises from activity in neural circuits […] and that a normal mind will happen only if those circuits contain basic representations of the organism, and if they continue to monitor the states of the organism in action. […] I am not saying that the mind is in the body. I am saying that the body contributes more than life support and modulatory effects to the brain. It contributes a content that is part and parcel of the workings of the normal mind." (ibid: 226)

« 14 » Based on Damasio's findings, the personal experiences that Quale identified as non-cognitive – emotion, volition, preferences, values, likes and dislikes, beliefs, etc. – are seen as part and parcel of the workings of the normal mind. Damasio's work implies that these personal experiences are not more primitive than reason in that the experiences result from the workings of all parts of the brain, including the neocortex and not just the lower regions:

"The apparatus of rationality traditionally presumed to be *neo*cortical, does not seem to work without that of biological regulation, traditionally presumed to be *sub*cortical. Nature appears to have built the apparatus of rationality not just on top of the apparatus of biological regulation, but also *from* it and *with* it. The mechanisms for behavior beyond drives and instincts use, I believe, both the upstairs and the downstairs; the neocortex becomes engaged *along with* the old brain core, and rationality results from their concerted activity." (ibid: 128)

« 15 » Damasio provided the following example of the relation between feelings and cognitive processes:

"As an example, the cognitive mode which accompanies a feeling of elation permits the rapid generation of multiple images such that the associative process is richer and associations are made to a larger variety of cues available in the images under scrutiny." (ibid: 163f).

"Emotion and feelings thus rely on two basic processes: (1) the view of a certain body state juxtaposed to the collection of triggering and evaluative images which caused the body state; and (2) a particular style and level of efficiency of cognitive processes which accompanies the events described in (1), but is operated in parallel." (ibid: 162f)

Opening the trap

« 16 » So, in Damasio's system, cognitive processes accompany what Quale regards as non-cognitive processes. Not only do they fit von Glasersfeld's notion of a concept, but also their cognitive nature opens the way for them to be communicated about.

"The facts that I have presented about feelings and reason, along with others I have discussed about the interconnection between brain and body proper, support the most general idea with which I introduced the book: that the comprehensive understanding of the human mind requires an organismic perspective: that not only must the mind move from a nonphysical cogitum to the realm of biological tissue, but it must be related to a whole organism possessed of integrated body proper and brain and fully interactive with a physical and social environment." (ibid: 251f)

« 17 » The work of Damasio constitutes a demonstration that Quale's radical separation of cognitive and non-cognitive knowledge is not viable. Damasio's work also illustrates that having a belief and reasoning about beliefs are distinguishable, so, like other beliefs, one can reason about religious beliefs. When doing so, two people might start with the "same" religious beliefs and conclude very different things. Still, because it is possible to communicate about religious beliefs in the way communication is considered in radical constructivism (Glasersfeld 1995), it is possible to develop viable religious beliefs. Furthermore, because the mind is related to the whole organism, in the final analysis, religious experiences and beliefs are constitutively human experiences and beliefs, in that it is human beings who are doing the experiencing and believing. Although religious beliefs are considered transcendent and not of this world, it is the human mind that considers them in that way.

Religious beliefs of two radical constructivists

« 18 » Quale contrasts radical constructivism and realism essentially as first-order models:

"[C]an a radical constructivist be genuinely religious – i.e., be a true believer in the doctrine of some definite religion? Here I would argue that the answer must be no! As noted above, the epistemic position of a religion is one of realism: its supernatural aspects, and its doctrine of an externally imposed design, are presented as being objectively true; and the believers are obliged to accept this truth in order to be received into the fold. In other words, the believer does not have the option that is available in RC: to regard the religion simply as constituting a model, constructed by the individual knower to generate knowledge that is viable for her, though not necessarily for other knowers." (§37)

« 19 » Rather than argue from these abstracted and generalized concepts of religion and radical constructivism, I contrast them with what two religious radical constructivists said about the relation between their religious beliefs and their radical constructivism. I appeal to Keith Leatham, who is a professor of mathematics education at Brigham Young University and who is also of the Mormon faith. Leatham explained that, in the case of the Mormon Church (The Church of Jesus Christ of Latter-day Saints),

"the belief is that God is a physical although perfect being and that God (often referred to as Heavenly Father) created each member of the human family first as a spirit in his presence. Individuals then received a physical body when they came to earth. Although at death the spirit leaves the body, eventually the spirit and the physical body are joined together again and return to the presence of God." (Personal communication, 17 Sept. 2015)

« 20 » Given his brief explanation of the Mormon faith, I asked Leatham to comment on the proposition that, in the case of his religious beliefs, he would not adhere to radical constructivist principles, but, in the case of secular knowledge, he would not have any

problem with radical constructivism. His reply was as follows.

"The typical trouble I hear expressed by those who see conflict between radical constructivism and spiritual knowledge is the belief that RC principles somehow preclude the possibility of coming to know anything about God. I just see this as a misunderstanding of what RC claims and does not claim to be. For me RC is a theory of how one comes to know anything that has to do with our mortal existence. RC doesn't make claims beyond that kind of knowledge.

"That said, if someone has religious beliefs, then they typically believe in a being (God) that is somehow beyond this world and that man can have spiritual experiences with God. For me, I can simply throw those experiences into the mix, and then apply the RC principles just as I would with any other kinds of experiences. So actually, for me, I see no reason why RC could not help me to better understand how my knowledge of God is constructed – it actually has given me great insights into that area of my knowledge." (Personal communication, 16 September 2015)

« 21 » Given that Leatham asserted that he could "simply throw those experiences into the mix, and then apply the RC principles just as I would with any other kinds of experiences," he obviously considered his religious experiences as among his other experiences and that he reasons about how his knowledge of God is constructed. So, I became very interested in how he would reply to Quale's assertion that:

"A religion, on the other hand, asserts as a fundamental premise that all phenomena observed in the world are designed, created and maintained according to an intention and for a purpose, by some sort of designing power. Or, in brief: science excludes an externally imposed design, while religion requires it!" (§28)

« 22 » Leatham's reply was as follows:

"It is certainly a core tenet of Mormon doctrine that God created this earth for a purpose. (And that purpose is basically what was articulated in those sentences about Mormonism yesterday – to come to earth, get a physical body, and see if we will follow His commandments so that we can return to His presence having become more like Him). But I see no reason why there would be a conflict between this belief and science. I view scientific advancements as providing greater and greater insights into the *how* of creation and leave the *why* to my faith." (Personal comm., 18 Sept. 2015)

« 23 » At the same time that I was communicating with Leatham, I was also communicating with Katy Ulrich of Virginia Tech, who is a religious radical constructivist. She responded to a question on whether religion required an "externally imposed system" and how this related to creationism.

"RC and my belief in God are both extremely important parts of my life […] With regards to design, when I take the Bible as my data about the religious knowledge of the writers, I think it is safe to say that the idea that God has a design for the world we experience (note that I am assuming a Reality) is an important part of the Jewish tradition and continues into the Christian religion for most Christians. As for Creationism, neither my pastor nor I believe that the purpose of Genesis is to claim that the world was literally created in seven days. I believe that evolution is the most viable theory to explain most, if not all, designs we encounter in the natural world. However, because I believe that God designed the universe, I believe that natural selection is the mechanism he designed. I also believe that he can coordinate infinitely many levels of units, from our perspective. That is, he can deal with more complexity than could possibly be conceived of by us. Therefore, the idea that he has set into motion processes knowing that it would lead to certain aspects of our reality (as constructed by us, even) seems entirely plausible to me. Furthermore, with an absolute understanding of the working of everything, I also do not find it problematic that he can and does often alter the workings of the world, including our own thought patterns, through mechanisms that we do not understand, and probably never will. Having said all that, I would certainly not say, 'It's a miracle!' to explain how a student constructed a GNS." (Personal communication, 18 September 2015)[4]

« 24 » She also disagreed with Quale's sentiment that accepting her church's beliefs denies her belief that she has constructed a model of reality that is different than others' models:

"I can construct a first-order model intersubjective with the model of a religion and then join the religion. My interpretation of the beliefs we accept to join the faith are probably different than Quale's. His second-order model is that all religions demand we say that we are describing Reality instead of saying that we are describing our best models of Reality. That understanding of religious belief is not intersubjective with my own. I do, of course, act as if and even think as if my models are 'true' at times. But that is what we all do as RCs for all kinds of models." (ibid)

« 25 » In an earlier communication, Ulrich commented that, "I don't see why God would have to be barred a priori from my experiential model of reality. In fact, I dare say that one cannot deny the existence of God from an RC perspective" (Personal communication, 26 August 2015). Ulrich also agreed with Leatham about the "why" of existence rather than the "how."

« 26 » I never asked von Glasersfeld if he was religious. I do, however, vividly remember him commenting to me that, "I don't know how I got into this world, and I don't know how I will leave it." The way in which I interpret the "I" in his comment is precisely how he interpreted it above – as not in this world. For me, interpreting the "I" in that way opens the way for a radical constructivist to be religious. Isn't the basic motivation that drives anyone, including a radical constructivist, to be religious is for the self-conscious "I" to survive beyond the survival of the body that the "I" inhabits?

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4| GNS refers to the Generalized Number Sequence, an ensemble of operations that was constructed to explain students' mathematical reasoning (Steffe & Olive 2010).

Dubious Dichotomies and Mysterious Mysticisms

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> Upshot • I address two topics that I consider particularly problematic in Quale's target article. First, I question the purported distinction between cognition and non-cognition, and second, I inquire into a rather vague construal of "mystical philosophies." Given that both topics play important roles in the overall argumentative chain, their unfoundedness threatens to have serious consequences for the main conclusions of the article.

« 1 » Andreas Quale's target article "Religion: A Radical-Constructivist Perspective" is a welcome contribution to the field of constructivist studies, as it tries to flesh out a radical constructivist perspective on "an important ontological dimension of human experience," namely "religion" or, more precisely, "religious belief" (§2). The article is, as duly pointed out by the author, concerned primarily with "theistic / deistic Abrahamic conceptions" (ibid). Therefore, it can hardly be said to address religion in its entirety – an elusive conceptual beast, if ever there was one – but nevertheless, it provides interesting preliminary reflections and paves the way for subsequent research. In my commentary, I will focus on two aspects that I believe to be insufficiently dealt with in the article, namely the distinction between "cognition" and "non-cognition" (§§8–13), and the idea of "mystical philosophies" (§31).

« 2 » The purported distinction between "cognition" and "non-cognition" plays a central role in Quale's argument. It is used to characterize religious knowledge as a type of "non-cognitive knowledge" (§16), whose realist tendencies are then ontologically and epistemologically juxtaposed to cognitive-*and-realist* science (or scientism? §28) and cognitive-*and-relativist* constructivism (§38). However, there are good reasons to believe that this dichotomy is not as self-evident as it might seem at the first glance. To begin with, it is dubious whether the two categories are separable *in principle*. Although Quale briefly acknowledges the issue by paying lip service to contemporary debates on the topic (§9), it is far too pressing – after all, it *does* constitute the *central* premise in the author's argument – for it to be merely brushed aside unanswered. Giovanna Colombetti (2014), Colombetti & Evan Thompson (2007), and Luiz Pessoa (2008) have put forward convincing arguments that the classical distinction between cognitive and emotive processing is, in fact, *untenable*. More specifically, it has been claimed that, on both the *neural* and *psychological* levels, these two aspects are closely intertwined, if not completely inseparable.

« 3 » Criticisms of this type have been especially prominent in the so-called "4EA approach" in cognitive science. The 4EA approach originally developed as a reaction to the classical cognitivist / computationalist model of the mind that loomed large in the 1970s and 1980s. Unlike the classical model, which construes cognition as *data-processing* involving algorithmic (rule-based) manipulation of (brain-instantiated) symbols, the 4EA approach conceives of cognition as:

- *extended* – "cognitive states and processes can extend beyond the boundaries of the cognizing organism,"
- *embedded* – dependent on "facts about our relationship to the surrounding environment,"
- *embodied* – dependent on "facts about our embodiment,"
- *enactive* – "dependent on aspects of the activity of the cognizing organism," and
- *affective* – "dependent on the value of the object of cognition to the cognizer" (Ward & Stapleton 2012; cf. Vörös 2014).

In this view, then, cognition is not so much a matter of information-processing and rule following as it is a matter of "sensorimotor dynamics of the interactions between a living organism and its environment" (Stewart, Gapenne & Di Paolo 2010: vii); it is not something that involves (only) the dis-embodied rational (analytical) reasoning, but something that emerges against the backdrop of the back-and-forth engagement of the organism with its milieu (Varela, Thompson & Rosch 1991; Thompson 2007).

« 4 » This enactive / dynamic aspect is reflected in the fact that learning something rarely proceeds in the manner described by Quale: We do not *learn* the rules *first* and then go on to solve puzzles, but normally *learn* the rules (as well as the general meaning of equations, etc.) *by solving puzzles*, i.e., engaging with concrete examples, getting corrected, learning useful heuristics, etc. – and all these have to be somehow *demonstrated* (exemplified, en-acted etc.), *not merely communicated* (passed on in the form of well-defined rules that one can follow, etc.). Also, note that, according to enactive / embodied model, this dynamic dimension isn't merely preparatory work for "real learning," but constitutes the *integral part* of cognition itself – understanding is not *acquired* by means of following a prescribed set of procedures, but rather by skilfully engaging with concrete examples. For this reason, it is questionable whether Quale's schematic image of "cognitive" knowledge acquisition actually (ever) occurs *in practice* (moreover, given the specific embodied nature of human beings, it questionable if it could occur *even in principle*).

« 5 » But even if we were to accept the purported dichotomy and were to concede that it is, in fact, possible to distinguish at least *analytically* between cognitive and non-cognitive knowledge, it is far from clear whether "cognitive knowledge" can be reduced to the use of "rules and procedures that can be agreed on between knowers, and thus demonstrated and communicated (say) from teachers to students" (§8). First, it is not at all clear whether *rule-following* equals (or entails) *understanding*, as exemplified by, e.g., John Searle's well-known Chinese room (Searle 1999), in which a person who knows absolutely no Chinese is locked inside of a room with two windows. This person has access to transformational rules (written in English) that enable him to match each set of Chinese characters received from one window with the appropriate set of Chinese characters handed out from the second window, so that, for someone who is standing *outside* of the room, it seems as if the "room" (or the person within it) speaks fluent Chinese. But even though the person in the room clearly knows how to *manipulate rules* that enable him to correlate appropriate incoming characters with appropriate outgoing characters, it seems questionable whether he might be claimed to really know Chinese and therefore *understand* what he

is saying. Or take a skilled mathematician who gets a sudden insight into a pernicious problem she has been working on *without* following a systematic, well-defined set of procedures. Perhaps she is, at least initially, even unable to structure and communicate her insight in the form of clear rules. But would we really want to claim that she has *gained* knowledge *only after* she has been able to structure and communicate them in such manner? These examples might be (overly) simplistic and perhaps (at least the first one) a tad eccentric, but I believe they get the message across: rule-following and understanding are *not*, at least *prima facie*, identical, so it will simply not do to *presuppose* that they are.

« 6 » Also, there are good reasons to believe that the categories of cognitive and non-cognitive knowledge, at least as construed by Quale, are problematic *in themselves*. On the one hand, the "cognitive" category seems to be *too narrow*, as it precludes the title of "cognitive" to *many*, if not *most*, instances of what is commonly referred to as knowledge in natural sciences. Barring Quale's paradigmatic cases (i.e., mathematics and physics) – and even here, one is left to wonder why mathematics should be classified as a natural science (does the same apply to logic? *why?*) – can we really claim that, say, neuroscience, physiology, biology, or even biochemistry coincide with this model? Sure, there are "facts" and "heuristics" that can be expressed and communicated in these sciences, but *rules* on par with *Ohm's law*? Hardly. On the other hand, the category of non-cognitive knowledge seems to be *too broad and diverse* – so much so, in fact, that it is depleted of almost all explanatory value. It is questionable whether the category of "non-cognitive knowledge" is as homogenous as the author wants it to be: maybe I cannot communicate my emotions, but is this also true for, say, my volitions, preferences, and motivations? However, if so, it stands to reason that *some* of the phenomena in the non-cognitive category are *more akin to*, and perhaps *overlap with*, those in cognitive category (if there, indeed, be such a category). But which ones, and why?

« 7 » Note that all this has direct bearing on Quale's overall argument. To take just one, and arguably the most blatant, example: no convincing reasons are given as to *why* religion is supposed to fall into the *non*-cognitive category, especially if *theology* is to be included in its ranks (as Quale leads us to believe in §28). Take, for instance the following passage, in which William James summarizes a chain of reasoning that was typical for theology at the end of the 19th century:

> "Since God is First Cause […] he differs from all his creatures in possessing existence a se. From this 'a-se-ity' on God's part, theology deduces by mere logic most of his other perfections. For instance, he must be both necessary and absolute, cannot not be, and cannot in any way be determined by anything else. This makes Him absolutely unlimited from without, and unlimited also from within; for limitation is non-being; and God is being itself. This unlimitedness makes God infinitely perfect. Moreover, God is one, and only, for the infinitely perfect can admit no peer. He is spiritual, for were He composed of physical parts, some other power would have to combine them into the total, and his aseity would thus be contradicted. He is therefore both simple and non-physical in nature. He is simple metaphysically also, that is to say, his nature and his existence cannot be distinct, as they are in finite substances which share their formal natures with one another, and are individual only in their material aspect." (James 2009: 254)

« 8 » This, I feel, is a clear example of the "rule-following" procedure, if ever there was one. One could argue, of course, that the *basic presuppositions* in this chain of reasoning are faulty, but this is an issue related to *evidentiality*, not to *rule-following*. Now, I have not chosen this quote because I believe the content of the quote to be correct, but to underline an important point: there is little, if anything, in Quale's conception of "cognitive knowledge" that would prevent us from classifying *at least some* dimensions of religious knowledge as *cognitive*. Rule-based reasoning has to end somewhere (even in logics and mathematics), and we may argue about the proper criteria for accepting a given set of basic axioms, but the latter are not likely to be fully reducible to rule-following procedures (think of the "principle of non-contradiction"). So, either we accept that *all* cognitive knowledge (even mathematics and logics) ultimately stems from non-cognitive knowledge or we allow that *some* aspects of religious reasoning are (genuinely) cognitive in nature.

« 9 » So much for the cognitive / non-cognitive dichotomy. Let us now take a brief look at "mystical philosophies." In his text, Quale uses the term only once and does not sufficiently elaborate on it, aside from stating that it encompasses "certain trends in Zen Buddhism and some other spiritual traditions" that "explicitly emphasize that there is no 'truth as such' – that all religious systems are merely models, and that all realisation of truth resides in the mind" (§31). This omission is regrettable for several reasons. First, mysticism seems to have been a recurring, if fringe, topic in the writings of the early proponents of constructivism. For example, it pops up on several occasions in Ernst von Glasersfeld (1995); it occurs in a paper on "Scientific and Poetic Knowledge," where von Glasersfeld argues that "a proper balance of the scientific and the mystical is crucial for the future of our world" (Glasersfeld 1998: 199); and occurs in an interview with Bernhard Poerksen, Heinz von Foerster even refers to himself as "a mystic" (Poerksen 2004). Regrettably, "mysticism" in these instances is rarely explicated – and when it is, the explications are provisional and / or equivocal –, so there is a pressing need to fill up this gap and embed the topic into the broader constructivist framework.

« 10 » Secondly, and more importantly, the notion of "mystical philosophies," at least in its current construal, seems to serve as a convenient conceptual receptacle for all religious elements that do not sit well with Quale's proffered interpretation. For instance, there are currents within different religious traditions that caution against *literal* interpretations of sacred texts and instead opt for *allegorical* and / or *performative* readings, i.e., readings that embed the meaning and signification of these texts within the realm of everyday experience and explicitly shun supernatural interpretations. Further, there are prominent currents within religious traditions that explicitly *deny* the existence of absolute reality "out there" and opt for either idealist or non-dualist interpretations of experience (e.g., certain schools of Buddhism, Daoism, and Hinduism). Also, there have been influential mystics *within theist traditions*, whose accounts of "the Absolute" might, at least

prima facie, seem radically different from how we normally conceive of these traditions. Yet, despite these seeming inconsistencies, they *have not* broken off from their confessions, but have maintained that their personal insights correspond to the respective doctrinal frameworks, which leads us to believe that the latter can be interpreted in very different ways. In other words, it would seem that Quale can posit the clear-cut distinction between constructivism and religious traditions only by ignoring or brushing aside those elements that contradict his blatantly bipolar view, elements that may perhaps serve as better candidates for a more meaningful dialogue between the two parties. Despite its originality and relevance, the reader of Quale's article is therefore apt to be left with a feeling that the end result is, indeed, a construct – but *not* necessarily of a constructivist type.

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Issues in Relation to Learning About Religion

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> Upshot • Quale offers a way of categorizing religious discourse based on radical constructivism. This commentary raises questions about the inter-relation of cognitive and non-cognitive knowledge, the role of testimony in learning about religion, and whether knowledge and belief have different roles in cognitive and non-cognitive knowledge, and suggests that Quale's analysis opens a tolerant perspective on religious discourse.

Introduction

« 1 » Radical constructivism (RC) has been principally concerned with the construction of rational knowledge (Glasersfeld 1984). Much constructivist work has focussed on maths and science, though Ernst von Glasersfeld's early academic work was on the semantic analysis of concepts such as causality (Glasersfeld 1974). Andreas Quale's radical constructivist perspective on religion offers an important dimension to discussions about religion at a time when such discussion about religious difference can tend to the intransigent.

« 2 » One of the hallmarks of the RC approach is the view that the individual knower constructs their knowledge (Quale §6). Jean Piaget's book title *To Understand Is to Invent* (1974) emphasises the importance of both understanding and invention. This position has the inevitable corollary that learning results from children's experimentation, and this emphasis on the child's role rather than the teachers' has been a source of criticism of constructivism (Tobias & Duffey 2009).

« 3 » Additions to both the cognitive and experimental emphases in constructivist education have led to a number of significant new approaches. These include the role of emotion and non-cognitive knowledge (target article and Quale 2014), the role of testimony in learning (Harris & Koenig 2006, Harris 2012), and the relation between knowledge and belief (Riegler 2015). Finally, Quale's comments on John Robinson's book *Honest to God* (§35) suggest an RC approach to religious doctrine. The aim of this commentary is to examine Quale's article in the context of each of these strands.

Reason and emotion

« 4 » Quale's (§8) distinction between cognitive and non-cognitive knowledge is aligned to the distinction between the categories of reason and emotion (§13). I wonder if a case could be made for a less divisive relation between cognitive and non-cognitive knowing? Certainly, not having "rules and procedures that are agreed" leads to non-rational experience and disagreements that are deep. Yet, there seem to be varieties of non-cognitive experiences.

« 5 » For example, not having access to rules and procedures might be a function of being in new cognitive territory and finding ones' existing rules and procedures inadequate for the experience. A person might need time to think and allow some cognitive distance to emerge so as to have appropriate and adequate categories to discuss the experience. Or alternatively, not having access to rules and procedures might imply an emotional experience that defied explanation and description. The former case implies an emotional impasse that resolves with time and the emergence of new ideas. The latter case does not have a cognitive solution. Bearing in mind that recent work on neuroimaging shows that cognitive and emotional processes play crucial and sometimes competitive roles in the domain of moral judgment (Greene 2015), it may be useful to see non-rational knowledge as having different degrees of emotional awareness with varying impact on cognitive knowledge. A question for the author is whether he sees the non-rational as a set of irreducibly non-cognitive emotional experiences that defy analysis. Or alternatively, do some non-cognitive emotional experiences trigger cognitive change, so facilitating movement from the non-cognitive to the cognitive?

Testimony

« 6 » The RC approach appears to prioritise discovery, invention, and experiment. How does the author see the constructivist approach (§6) applying to the development of religious thinking? Paul Harris and Melissa Koenig (2006) seem to challenge the constructivist model by drawing attention to the importance of testimony, particularly in the domains of science and religion. Harris (2012) provides evidence that children are critical users of adult testimony, seeking out testimony from others in whom they have confidence. While they readily distinguish history from fable, they appreciate the gravitas with which religious testimony is presented. This suggests children in their meaning making learn not only from their own experimental activities but also from testimony that allows them to adjust their concepts to fit better with experience. Telling examples are provided for the case of scientific testimony in children's learning about germs and in the case of children's spontaneous religious questions about why people who die are both buried and go to heaven.

In the former case, children's learning about scientific concepts arises from adults' presentation of hygiene, and in the latter case, children's sense-making in the domain of religion also depends on adults' testimony about what happens after death. The crucial issue in constructivist learning is synthesising experience to make new meanings that resolve mismatches between experience and acquired knowledge. However, the emphasis has more often been on creating opportunities for children to invent concepts as for example in learning maths and science (Johnson 2009). Have we overlooked the role of adults' testimony in children's learning?

« 7 » The role of children's assimilation of testimony implies that many cognitive constructions may be built with elements that defy explanation and so fall into the non-cognitive domain, yet at the same time some of these elements may be part of a religious set of rules and procedures. How does the cognitive–non-cognitive distinction work for sets of people who have different criteria for what "rules and procedures" mean? Our cultural embeddedness is fundamental to the context of human organisation of experience (rational and non-rational). Harris (2012) argues that this anthropological sensitivity goes beyond creating viable models of physical and social experience and is concerned with developing an awareness of culture. Religious and cultural difference provide international flashpoints today. I suspect that such cultural awareness must largely be considered non-cognitive and difficult to change because it is fundamental to identity and also difficult to define. Is it possible that the distinction between rational and non-rational knowledge will offer a mechanism to discuss fundamental differences in religion and identity?

Knowledge and belief

« 8 » Quale's distinction concerning cognitions is applied to religious issues (§§32–40). One additional use of Quale's distinction could be to distinguish between (cognitive) knowledge and (non-cognitive) belief. Given that faith is central to many religions, which is prior: religious knowledge or religious belief? Alexander Riegler (2015) has recently examined the knowledge–belief relationship. He criticised the traditional approach in which knowledge is intuitively based on belief; he proposed instead a model in which belief is based on knowledge, with concepts depending on expectations. Expectations are also important for one's sense of identity, and I suspect that one's sense of identity is both cognitive and non-cognitive. Might the relation between knowledge and belief differ in cognitive and non-cognitive knowledge? If we have viable rules and procedures, in Riegler's view computational ones, then we can assess beliefs in terms of assessing the knowledge on which beliefs are based. However, if there are no procedures on which to rely because the beliefs are personal non-cognitive experiences, then these non-cognitive items are beliefs that may be constitutive of identity. Challenges to ideas that are constitutive of identity tend to be very threatening.

A radical constructivist account of religion

« 9 » Quale presented Richard Dawkins's position (§33) as one of monolithic realism and suggests that it might be possible to allow two domains of reality: one for science and another for religion, with different rules (§35). In Gash (2014), I suggested that radical constructivism was part of a natural process of cognitive development in which realist positioning may move to RC positioning when RC arguments such as the personal cognitive basis of thought are noticed and appreciated. If this type of developmental change occurs in the theological domain, then theology might be viewed as a complex alternative metaphorical way of answering questions, rather than as a given "truth." Such a way of thinking would accept poetic and metaphorical answers as viable and inspirational statements rather than as truthful statements. Might this be a new tolerant RC conception of religion?

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Why I Am a Constructivist Atheist (in a Meaningful Way)

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> Upshot • An essential feature of Quale's point of view is the strict distinction between the cognitive and the non-cognitive. I argue that this position is untenable and hence that a radical constructivist can discuss religious matters.

« 1 » This commentary will proceed in two steps. In the first step, I would like to question the distinction between the cognitive and the non-cognitive, as I believe it not to be helpful, and to propose to extend the notion of sharing so that both cognitive and non-cognitive elements can be shared. This will allow me, in the second step, to claim that the religious-atheist-agnostic question is indeed meaningful and can therefore be answered (as the title of this commentary indicates).

Sharing and sharing is (at least) two

« 2 » The crucial element that distinguishes cognitive from non-cognitive knowledge is the existence of "reasoning of some kind, using rules and procedures that can be agreed on between knowers, and thus demonstrated and communicated" (§8) for the first kind and not so for the second kind, where there are "no commonly accepted rules of reasoning" (ibid). Is that indeed the case?

« 3 » My first objection is that in the cognitive realm, perhaps some rules and procedures are agreed upon by specific subgroups of a given community but that hardly any rules or procedures at all are accepted by all of them. Paraphrasing Abraham Lincoln's well-known quote: "You can agree with some of the rules all of the time, you can agree with all of the rules some of the time, but you will never agree with all of the rules all of the time." Let me take mathematics as an example as this field is quite familiar to me. I would assume that most, if not all mathematicians will agree that $2+2=4$ (in its standard interpreta-

tion or understanding); but when it comes down to, say, (the concept of) infinity, then unanimity quickly dissolves and disappears. For some mathematicians infinity exists (out there somewhere), for some it is nothing but a notion of potentiality, for some it is a matter of agreeing on certain constructions, for some it is a notion to be avoided altogether. Any "decent" history of mathematics and, by extension, science will also show how standards of agreement change through times, places and cultures. And, when it comes down to reasoning itself, the situation as far as logic is concerned is even more dramatic than in mathematics. Almost any logical deductive rule I know of has been questioned at some time or other. See, e.g., Lloyd Humberstone (2011), more than one thousand pages only to deal with the five connectives of propositional logic. This means that even in the case of the cognitive realm, there are different, sometimes mutually exclusive if not contradictory, sets of rules and procedures rather than a single, unique set.

« 4 » My second objection concerns the presence of meta-levels in one's worldview, no matter whether one is a realist, a relativist or a radical constructivist. Surely within my own experiential world I can reflect on that world, thereby introducing a meta-level. This raises the following question: If we keep up the distinction between the cognitive and the non-cognitive, where do the meta-levels belong? More precisely: Is it necessarily so that a meta-level of the (non-)cognitive should itself be (non-)cognitive? The answer must be negative, I think, because Andreas Quale's target article shows otherwise. Here, we are presented with a cognitive reflection on the non-cognitive, using arguments, reasonings and procedures that are shared (but not necessarily by all, as my first objection indicated). How else could I have made sense of the text in the first place and have disagreed with some of the issues in it? Another example: When Galileo wrote in 1623 in *The Assayer* (Galileo 1960) that the book of nature is written in the language of mathematics, are we still on the cognitive level or are we moving away into the other realm of the non-cognitive? A good case can be made, along Quale's own lines, to suggest that we do enter the non-cognitive because Galileo talks about a book, hence of the author of that book, thereby introducing the supernatural, as it is safe to assume that we are talking about God. He also talks about nature being all mathematical, a clear indication of the existence of a design. So according to Quale, Galileo's quote should be considered to be of a religious nature and, therefore, to belong to the non-cognitive.

« 5 » Taking these two objections together, the outcome is that the distinction between the cognitive and the non-cognitive becomes totally blurred. In a sense it is a shame that the author declares in §3 that he will restrict himself to the natural sciences. It is precisely in domains such as psychology and sociology (and no doubt other sciences as well that belong to the humanities and social sciences) that it becomes possible to study the non-cognitive and to arrive at some common standards for sharing such knowledge. Hence my claim is that in both cases, standards can be established that guarantee that knowledge can be shared. Hence religion or religious beliefs can be present in the experiential world of an individual knower.

The compatibility of being a radical constructivist and an atheist

« 6 » Imagine a community of radical constructivists, all having their own experiential world. In that world, others are present both at the "object" level but also, and more interestingly so, at various meta-levels. Any member may have its own private ontology and reflect on this but may also assume that all the other members of the community do so likewise. Hence, they can speculate about each other's ontology and, above all, share these speculations with one another. If all of this is possible, then it cannot be ruled out that at some moment (though not for all moments, see §3 in this commentary) all members share common elements in their private ontologies, thus establishing a "communal" ontology. They might even be tempted to label these common elements "the absolute truth." In extreme cases, it can be even be coerced, just as the author states in §38: "… not to be questioned by the congregation!" If such a situation is possible, surely some form of sharing must be present here. It is in that sense that I believe that a community of radical constructivists can indeed be religious and actually share a religion with one another – or disagree and enter into fierce debates about whether the absolute truth is indeed the absolute truth and not some form of opium of the people.

« 7 » A quick remark aside: in footnote 13, Quale claims that he knows of no religion that "accepts the believers' freedom to construct their own individually viable truth values for doctrinal propositions." But, as it happens, I myself was raised in a Protestant family where the basic belief was that the voice of your conscience is the voice of God. This entailed that every member of the congregation had to deal with these issues individually and that the main task of the minister was to be a guide, in case that voice was not clear enough. This also entailed that although one single word was used, namely "God," there was no guarantee at all that the individuals' interpretations were similar, if comparable at all.

« 8 » This brings me to the final point: What about the atheist? From the previous considerations, it follows that a radical constructivist can indeed talk about his beliefs, his atheist attitude in particular. Through a reflection on the meta-level of the cognitive level, more specifically by reflecting on how the sciences provide us with knowledge to be integrated into the experiential world, a radical constructivist can arrive at the conclusion that extending that world with any form of supernatural force, presence or being is not necessary at all and hence he or she rejects such an entity altogether and declares him- or herself to be an atheist. Most important of all, this does not mean that the atheist *knows* that there is no God. Not only is it, as far as I can see, a matter of acceptance rather than of knowledge, but it is also related to the non-cognitive realm. The idea that there will be nothing after this life, no sequel or second scenario, is deeply comforting and in addition makes my life meaningful, hence it is strongly tied to feelings, emotions and values.

Conclusion

« 9 » This commentary has two sources. The first one is obvious: I am an atheist and I strongly sympathize with constructivist approaches and ideas, hence this article posed a hard challenge to me. If the author were

right, then I would have a serious problem. (Admittedly this commentary is not sufficient to eliminate that problem but at least it points the way towards a more complete argumentation). The second is less obvious: when reading the article, I was struck by how close its argumentation (especially in §37) is to "old-fashioned" logical empiricism, where metaphysical questions were rejected as being meaningless. I was thereby forced to realize that logical empiricism and radical constructivism are closer on such issues than I had previously thought. In addition, it forced me to reconsider the early work of Rudolf Carnap, especially Carnap (1967), and to see that what he is presenting is not merely a logical but also a constructivist approach to the world. There is nothing more pleasing for a philosopher to revisit places where he has been, thinking he knows them through and through, and yet to discover new ways of looking at them.

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Author's Response

Is God a Radical Constructivist?

Andreas Quale

> Upshot • Since all my commentators express some reservation about the distinction between the cognitive and non-cognitive aspects of knowledge in general, and its applicability and relevance in the domain of religious belief in particular, I will address the question of why this distinction is important and whether these two modes of knowledge can be communicated. Further questions I try to address include: Can a radical constructivist be an atheist, or alternatively a religious believer? What exactly would these designations mean? Is it at all possible to discuss meaningfully the question of whether God exists? Can two or more people ascertain whether they in fact share their concept of a God?

Introduction

« 1 » I wish to express my thanks to the commentators, in random order: Urban Kordes, Thomas McCloughlin, Leslie Steffe, Sebastjan Vörös, Hugh Gash, and Jean Paul Van Bendegem. All their commentaries have been stimulating and thought-provoking. It has been a pleasure to read them and reflect on the issues that they raise. I have chosen to deal with each commentary separately and formulate my response to the commentator's remarks. This, however, does inevitably entail some repetitions in the text; as it turns out, a number of arguments and results are shared between several of the commentators. To make the argumentation more readable and easier to follow, such common trends and arguments will also be discussed separately in the Conclusion.

Urban Kordes

« 2 » Kordes questions the distinction that is made in the target article between *cognitive* vs. *non-cognitive* knowledge, especially with regard to religious beliefs. And he poses the question: Why does belief in design and supernaturality belong to what the target article defines as the non-cognitive domain? In fact he claims that the definition proposed in this article, "using rules and procedures that can be agreed on between knowers" (§5), can also be applied to teaching the religious concept of creation. Here, he formulates the requirement that an explanation of the world must be "*rationally* adequate" (§6). But what does this mean? Certainly a creation myth can be "rationally discussed" (ibid), as an explanatory model, in the context of radical constructivism (RC). One would then need to address questions such as: Was there a Creator? What is He like? Why did He create the world? etc. There is no scientific evidence bearing on such questions; any answers would have to be constructed individually by each participant. I claim that this can lead only into subjective and imaginative speculations, ultimately underpinned by some kind of religion. And the resulting knowledge is then by definition non-cognitive – there are no commonly accepted shared rules guiding the construction. At most, there may be some ontological ideas (often of a religious nature) that are shared between some of the participants, but that have no persuasive power towards the "non-believers."

« 3 » A similar argument can be made for supernaturality (§7), i.e., phenomena that cannot be fully accounted for by natural science. Kordes speculates that if such items were to be found and "adequately described" by new data and scientific models, science would have to incorporate these items in some way. The question is: Does this "adequate description" imply that the new items will in fact turn out to be a legitimate extension of natural science? If so, they cannot be "supernatural," as this term is generally understood. Kordes then goes on (§8) to consider a kind of "expanded awareness" that may open up contact with experiential worlds or inner forces that are unreachable in the normal state of consciousness and cannot be rationally described. Here, Kordes and I appear to be in essential agreement: this is what I have referred to in the target article (§19) as "mystical philosophies," which definitely belong to the non-cognitive domain, described by William James (2009) as an *ineffable* religious experience – a feeling of experiencing absolute and true knowledge, which is "above the realm of logic," as it were.

« 4 » Finally, in §§11f, Kordes discusses the issue of whether a radical constructivist can be religious. Here, we seem to differ on a point of interpretation. We agree that both a believer and an atheist must necessarily be realists – i.e., they must accept a realist

ontology for their individually experienced worlds. In particular, an atheist will accept as an absolute ontological truth that there is no God. Thus I claim that an atheist cannot be a (radical) constructivist since this philosophy allows no absolute truths: any proposition about the world is (and must be) constructed by an individual knower, and hence it can only have a truth value relative to this knower. On the other hand, I would describe the position of a truly constructivist agnostic on the existence of God as follows: not the somewhat defeatist "I do not know," which in principle holds open the possibility that there may be hard evidence (presently unknown to me) that supports the existence or nonexistence of God; but rather the positive assertion according to which no God figures in that person's presently constructed world, and so any question of His possible existence is irrelevant and meaningless for that person. Contrary to what Kordes seems to imply, this is not a question of uncertainty: the existence of God is neither asserted nor denied, but simply dismissed as a meaningless proposition in the ontological world constructed by the knower.

« 5 » The dichotomy of realism vs. constructivism is well-described in §13. On the one hand, everything we can experience is intuitively perceived to be objectively real – what Husserl calls the "default mode" of our consciousness. On the other hand, RC asserts that this objective reality is illusory: we all construct our experiences, not to discover a reality but to organise our individual experiential world. Thus the constructivist lives in two worlds, as it were: the personal epistemic domain of everyday life, and the theoretical philosophical position of constructivism. This serves to illuminate the fact that human beings are complex beasts, simultaneously spanning many different persuasions and approaches to life: philosophies, political convictions, religious beliefs, etc. So none of us can fully live up to the radical constructivist ideal.

Thomas McCloughlin

« 6 » The answer to McCloughlin's question of "whether religious belief is a cognitive activity" (upshot) will depend on what is meant by the term "cognitive." He suggests the somewhat vague description "subject to logical reasoning," and goes on to assert that religious belief can be the result of individually constructed cognitive processes (§1). With this, he raises an interesting epistemological issue: science is generally regarded as an objective investigatory enterprise, employing hypothesis testing that is constantly refined by an improvement of "best fit" checking. This kind of scientific investigation "is sometimes portrayed as the search for 'truth'," describing an external reality (§1). However, such a truth does *not* emerge uniquely from this "best fit" approach: this can only produce an infinite series of approximate explanations, which may or may not converge (in some sense) to a putative final truth. In any case, this process of infinitely repetitive "best fit" approximation may, as is also pointed out by McCloughlin, be considered to be wasteful of intellectual resources.

« 7 » The notion of "belief" is of course central to any discussion of religion. Citing a substantial amount of published work, he proposes the following definition: beliefs are unquestioned ontological representations of the world, featuring convictions about events, causes, agency, and objects that the believers accept as veridical. They can be expressed as propositions involving two properties: representational content and assumed veracity. Thus they can provide both an ontological representation of the environment and a support of goals for action in it.

« 8 » An interesting issue is cited in McCloughlin's interpretation of science as a world view – specifically, concerning the theory of evolution. The contrast is between Richard Dawkins and Stephen Jay Gould (§4). Dawkins sees science as a monolithic system: the central idea here is one of an overall design, where the evolutionary process leads ultimately to a description of the "true nature" of the world. Gould, on the other hand, emphasises the element of randomness in the evolutionary process, the numerous "dead ends" of species that did not succeed, and the survival of any species as a matter of chance. Thus we have two coexisting and competing ideas of the nature of science! McCloughlin goes on to draw an analogy to what he perceives as a similar conflict between science and religion, what he calls a "phoney war" between the two. I will say that the argumentation he offers here in support of this analogy is not easy to grasp. In particular, it is not apparent to me where and how religion suddenly enters into his perspective on the Dawkins vs. Gould controversy: Does Dawkins represent the side of science, vs. Gould on the side of religion – and if so, why? Hence the conclusion in this passage – "religion and science are not there to answer the same questions, even if the questions concern the same context" (§4) – lacks the proper arguments.

« 9 » To get back to McCloughlin's original question: Is religious belief to be considered cognitive? Unfortunately, this question cannot be decided since McCloughlin's use of "cognitive" does not enjoy a rigorous definition. In my target article, I have posited a crucial distinction between the notions of *cognitive* and *non-cognitive* knowledge. In fact, the whole argumentation presented in my article rests on this distinction. But unfortunately this is not reflected in any part of the commentary – except in a short passage (§1) referring to the issue of "whether religious belief is cognitive or non-cognitive, i.e., subject to logical reasoning." Since this issue is not further developed or discussed in the commentary, notions such as "cognitive / non-cognitive knowledge," or propositions such as "religious belief can be construed as […] a collection of relateable micro-systems that interact with other cognitive systems" (§2), or "religious belief is a universal human phenomenon that […] has a cognitive component" (§3) remain unclear.

Leslie Steffe

« 10 » Steffe raises two major points:

- The separation between cognitive and non-cognitive knowledge, as proposed in my target article, is not viable; and
- How can religious radical constructivists establish relations between their religious convictions and their radical constructivist beliefs?

« 11 » Concerning the first point: Steffe appeals to the work of Antonio Damasio, who claims that all knowledge (whether of the cognitive or non-cognitive kind, as these are defined in the target article) is closely intertwined in the mind of the knower, and works together in determining human behaviour. Thus experiences that are identified in the target article as non-cognitive – emotion, volition, likes and dislikes, etc. – are seen as part of the working of the hu-

man mind. One consequence of this is that "cognitive processes accompany what Quale regards as non-cognitive processes" (§16). Steffe asserts that "this constitutes a demonstration that Quale's radical separation of cognitive and non-cognitive knowledge is not viable" (§17). He argues that personal non-cognitive experiences – emotion, volition, etc. – "are not more primitive than reason, in that the experiences result from the workings of all parts of the brain" (§14).

« 12 » As they stand, I do not have any issue with these arguments: I think they provide a perfectly permissible model of the process of cognition in the human mind. However, I do not agree that it is necessarily more valid or viable than the corresponding model that is presented in the target article. Recall the basic premise of RC – briefly (and somewhat schematically), this philosophy may be outlined as follows:

- An individual knower achieves knowledge about her own experiential world by constructing a *model* of it in her mind.
- The particulars of any such model will then be based on the *sensory input* that she is continually receiving, and her own *reflection* on this input. This is the only source of information about her world that is available to her; it is not possible to peek behind the scene and see the world as it "really is" when no one is looking.
- It follows that the constructed model represents the individual knower's perception of her own experiential world – different knowers will have constructed their own models, and there is no way of determining which (if any) of their models is, in some absolute sense, the "correct" one.
- RC does not lead to the position of *solipsism*: a conviction held by the knower that everything in the world is locked inside her own mind – nothing exists outside her. We are making the general assumption that knowers are incorporated into a social setting of some kind; and through a lifelong process of socialization they will have learnt to communicate with each other, through a shared social frame of reference: a common language, societal organization, etc. Thus they can interact with each other, within this social framework – agreeing that they are in fact sharing a common experiential world, and some model of it, in the sense of RC.

« 13 » The upshot of all this, in the present context, is that there is no way to single out one particular model as being more true / correct / valid than any other, in an absolute sense. One may of course prefer one model over another. Steffe clearly favours Damasio's model over the model I describe in the target article. However, it is only one of many possible ways to describe the phenomenon of human cognition, and as such it does not entail the claim that the one I use is "not viable."

« 14 » As for the second point Steffe makes, in §§18–35 we find personal testimonies of two radical constructivists who also profess a religious belief. Basically, I see both these as "double declarations": their comprehension of RC is augmented by their construction of a religious world. In other words, they are RC in some issues, and religious in other issues. (Thus it may be claimed that this is not the *full* radical constructivist approach that I have described.) In these testimonies, the construction of a religious ontology comes in at the start: "[T]he belief is that God is a physical although perfect being and that God (often referred to as Heavenly Father) created each member of the human family […]" (§19). In effect, Keith Leatham splits his constructed world into a *secular* part: "For me RC is a theory of how one comes to know anything that has to do with our mortal existence. RC does not make claims beyond that kind of knowledge" and a *religious* part: "[If someone has religious beliefs, then they typically believe in a being (God) that is somehow beyond this world, and that man can have spiritual experiences with God" (§20).

« 15 » The second radical constructivist interviewed by Steffe, Katy Ulrich, states (§25) that: "I dare say that one cannot deny the existence of God from an RC perspective." Here, I fully agree: RC, as I understand it, does not – and indeed cannot – deny a proposition about the world. What it does is to declare that any such proposition is constructed by an individual, and will therefore have validity for that person. If, however, it does not enter into the constructed world of another person, it cannot claim to have validity for this person. Thus, for instance, referring to my response to Kordes (see above): the proposition / belief "God exists," as it appears to a person who has not incorporated it into her constructed world, is neither wrong (to be denied) or right (to be affirmed): it is simply meaningless and irrelevant, in the constructed world of this person.

Sebastjan Vörös

« 16 » Vörös questions my distinction between *cognition* and *non-cognition*. In my target article, I asserted that they are separable in principle. In contrast, Vörös argues, citing a number of workers in the field, that these two aspects are in fact closely intertwined on both the *neural* and *psychological* levels, so that the distinction is untenable.

« 17 » Vörös points at an alternative to the distinction I have made, i.e., the 4EA (extended, embedded, embodied, enactive, and affective) approach. It aims to describe the "[…] dynamics of the interactions between a living organism and its environment" (§3). One major aspect of this is that one does not learn the rules first, and then apply them to solve problems / tasks; rather, one learns the rules by solving problems (i.e., engaging with concrete examples). I have no quarrel with this point of view; however, I would maintain that the *knowledge* acquired through this learning process can be classified as cognitive or non-cognitive, depending on whether or not it can be described and communicated by the application of specific "rules and procedures." This is the model advocated in the target article.

« 18 » Concerning the categories of cognitive vs non-cognitive knowledge, Vörös (§6) suggests that the first category, characterized by "communicable rules and procedures," may be too narrow; it applies to mathematics and physics (the examples given in the target article), but appears not to fit too well with other natural sciences such as biology, biochemistry, and neuroscience. The answer to this objection is that there are rules and techniques – controlled observations, experimentally repeatable regularities, verification by trial-and-error, etc. – that guide work in *all* natural sciences, and these can indeed be described as cognitive "rules and procedures." However, rules that are formulated mathematically (such as Ohm's

law) will be more frequently encountered in the *physical* sciences (physics, astronomy, material sciences, etc.), which are heavily dependent on mathematical formalism.

« 19 » As for the non-cognitive category, Vörös suggests in §7 that it may be too broad, and asks whether it is in fact possible to communicate one's emotions, volitions, preferences, motivations. If so, the strict distinction between the two categories is put in doubt. For instance, why does religion, and in particular theology, fall into the non-cognitive category? James's quote in §7 illustrates this well. It contains a series of propositions, apparently connected by rules of reasoning that superficially resemble classical logic: if A, then B, and from this follows C, and so on. However, on reading the text more closely, the *premises* of this "logical" reasoning are seen to be theological postulates, which are definitely non-cognitive – and in fact unintelligible to anyone who is not already among the converted. For example, consider this (suitably shortened) passage, as quoted by Vörös:

> "Since God is First Cause […] he must be both necessary and absolute, cannot not be, and cannot in any way be determined by anything else. This makes Him absolutely unlimited from without, and unlimited also from within; for limitation is non-being, and God is being itself." (James 2009: 254)

« 20 » This is indeed "rule-following," but it is *logically empty*: from meaningless postulated premises, through seemingly "logical" syllogisms, follow meaningless conclusions (except, of course, to the initiates who already belong to the flock). I cannot agree with Vörös (§8) that this allows us to classify some dimensions of religious knowledge as cognitive.

« 21 » In §10, Vörös points out that there are different religious traditions that caution against *literal* interpretations of sacred texts, and instead recommend "*allegorical* and / or *performative* readings" that "explicitly shun supernatural interpretations." Thus, for example, there are "prominent currents within religious traditions that explicitly *deny* the existence of absolute reality 'out there'" (ibid). These have then been claimed to be in accord with religious doctrine, which leads to the presumption that the established doctrinal frameworks can be interpreted in many different ways. Note, however, that these new religious doctrines must still be classified as *non-cognitive*: the old dogmas, describing the classical interpretation of the religious doctrines, have now been changed / augmented by introducing new interpretations of the doctrines. I maintain that this does *not* affect, or make untenable, the distinction that I have made between the conception of cognition (the constructivist view) and non-cognition (religious traditions and faith).

Hugh Gash

« 22 » Gash alludes to the relation between knowledge and belief, and asks: Do knowledge and belief have different roles in human cognition? From my point of view they definitely do. In the context described in the target article, it is reasonable to identify "knowledge" as cognitive knowledge and "belief" as non-cognitive knowledge. This situates religious belief and knowledge in the domain of non-cognition, i.e., not subject to any "rules and procedures" such as those governing cognitive phenomena (as defined in the target article).

« 23 » It is also reasonable to ask: Can my distinction between cognitive and non-cognitive phenomena work for sets of people who have different criteria for what "rules and procedures" means? I tend to think that in this case, one would need to establish a common set of references as part of new "rules and procedures." Such common references would then of course have to reflect the different criteria for acceptable rules and procedures that are held by these "sets of people." At this point, though, I cannot offer any concrete examples of this.

« 24 » What can RC tell us about the development of religious thinking? Gash (§6) brings up the role of *testimony* – specifically, when an adult (say, a teacher) is presenting some religious issue for children. I am assuming here that this is not a case of children being left to construct their own knowledge by themselves, in the sense of RC; on the contrary, they are being *told* by an outside authority (the adult person) what they should think. Gash's example – what happens to people when they die – is quite apposite: in a Christian religious context, part of the answer, as given by the adult, would presumably be that they will go to heaven. Of course, this scenario places a responsibility on the adult to avoid the pitfall of *indoctrination* (i.e., preaching): that is to say, telling the children that this is the Truth and that they have to accept it and learn it.

« 25 » One issue arises here: Is it possible for non-cognitive experiences to trigger cognitive change? In §5, Gash seeks to provide an affirmative argument. A person may be in "unknown cognitive territory," where the rules and procedures presently known to her are not adequate to deal with some concrete situation. She may then feel that she needs "time to think" to come up with some cognitive categories that are applicable to the issue being considered. Let us imagine that this person eventually manages to arrive at some such categories that meet her needs. This might be an example of an initially non-cognitive experience (uncertainty about the facts of the matter) that may eventually trigger a cognitive solution, and thus help to bridge the passage from the non-cognitive to the cognitive. So, the answer to the question above is yes: under certain given circumstances, it is possible for non-cognitive experiences to trigger cognitive change.

« 26 » In §9, Gash suggests that "theology might be viewed as a complex alternative metaphorical way of answering questions, rather than as a given Truth." This approach would then accept poetic and metaphorical answers as viable and inspirational statements, rather than as truthful statements. And he asks: "Might this be a new tolerant RC conception of religion?" This raises the question: Does RC indeed feature an *intolerant* conception of religion?

« 27 » This does not seem to be the case. RC does not offer an answer to age-old questions such as whether God exists, or whether there is an afterlife. Indeed, it is mute on statements about the truth or falsehood of religious propositions. Thus, addressing a person with the question of whether to her knowledge God exists would produce neither a *yes* (as the religious believer would say) nor a *no* (as the confirmed atheist would say). Let us consider a radical constructivist who has constructed her ontological world such as not to include the notion of a God. Therefore she would not answer in a traditionally agnostic way, saying that

she does not know but at the same time cannot exclude the possibility that He does exist. Rather, she would stress that there is no such thing as a God appearing in her experiential world, as she has constructed it, and that any question involving the existence of such a being is meaningless to her. Indeed, I would regard this as being a major contribution of RC to the philosophy of religion. Note that while any question featuring God is irrelevant to this constructivist, this does not mean being "intolerant" towards religion; rather, it delimits what questions can be answered in principle.

Jean Paul Van Bendegem

« 28 » In the cognitive domain, there are (or so I claim in the target article) rules and procedures that can be agreed on, and thus demonstrated, shared, and communicated. In §3, **Van Bendegem** points out (rightly, as I would say) that in general no specific rules and procedures will be accepted in detail by all practitioners in the field. He asks us to consider the example of mathematics: the rules of simple arithmetic are unanimously accepted, but for concepts such as infinity, unanimity disappears. Similar "anarchic" situations can be identified in the sciences, and (even more so) the discipline of logic. So what happened to the "agreed rules and procedures" that were claimed to determine and govern activities in the cognitive domain?

« 29 » To answer this question, let us return to the case of mathematics. Here, the apparent anarchy applies to the *objects* that are being manipulated – not to the general rules of manipulation. For instance, the concept of infinity comes (as noted by **Van Bendegem**) in many different manifestations: for Platonists it actually exists "out there" somewhere, for mathematical constructivists it represents just a potentiality for mathematical action, for finitists (such as **Van Bendegem** himself) it is a notion to be avoided. Yet the rules for *manipulating* the notion of infinity, in whatever manifestation we make use of it, must be such that it produces the results we expect, e.g., smooth (infinitesimal) variation of continuous curves, or asymptotic approach of one curve to another. This is of course a rather specialised and simplistic example, but it may serve to illustrate the *consistency* we require of our accepted rules and procedures in the cognitive domain: they will come in many formally different shapes and sizes, but the end result of their application to concrete mathematical and physical scenarios must not be in conflict with each other. In other words, the discipline of mathematics must not be compromised by the appearance of contradictory results when it is applied in different formal guises to the same concrete problem. This may be described as a *pragmatist* conception of mathematics, where its usefulness in solving problems is considered to be of primary importance.

« 30 » Consequently, the rules and procedures assumed to govern the cognitive domain are not in themselves to be regarded as constituting a unique set. As has also been remarked by **Van Bendegem** (§3), it would probably be better to think of them as "different, sometimes mutually exclusive if not contradictory, sets of rules and procedures […]"

« 31 » In §§6–8, **Van Bendegem** argues that being a radical constructivist is compatible with being an atheist. He posits a community of radical constructivists, and how they can come to share a religious ontology. I have no issue with this scenario – I have used it myself in my response to **Steffe**'s commentary above (see §12). In this community, the constructivists are incorporated in a social setting; and through the process of socialization they will have learnt to communicate with each other, through a shared social frame of reference. Any member of this community will then have constructed her own ontology, and may also assume that all the other members of the community have done likewise. Using their common language and social setting, they can talk about each other's ontology, and gradually discover that they seem to be sharing a lot of it between them: for instance, using the word "God," and agreeing that it appears to have the same meaning to them. In this sense, then, they can be said to *share* this concept of "God" – and by extension, other religious concepts – with one another.

« 32 » By the tenets of RC, *any knower* will construct her own personal ontology. There are two options:

1 | This personal ontology may incorporate the idea of a God, and the context in which He appears; in this case she will be a *believer* in some religious doctrine. Note that this will be non-cognitive knowledge for her, i.e., part of her experiential world, but with no way of communicating it to someone who has not gone through the same experience of sharing.

2 | The knower's constructed ontology may be such as not to incorporate a God. In this case she will be an *atheist*, in the meaning of RC (§29 above). Note that she does not claim to know that God does not exist, but rather that there is no such concept as a God in her constructed ontology, and hence all questions pertaining to His existence must be meaningless to her.

I interpret **Van Bendegem** (§8) as saying that he is essentially in agreement with this position, thus declaring himself to be an atheist in the sense of RC.

Conclusion

« 33 » The main topic of my target article (and this response) is the impact of radical constructivism on religion. So what are the insights I gained from the discussion of my commentators?

« 34 » All my commentators express some reservation – some in stronger terms than others – about the distinction between the cognitive and non-cognitive aspects of knowledge in general, and its applicability and relevance in the domain of religious belief in particular. But from there they tend to diversify, each proposing and discussing his own particular concerns and criticisms concerning this distinction, which made it necessary to address the question of why this distinction is significant. One particularly important aspect refers to the different ways in which these two modes of knowledge can be *communicated*. Simply put: cognitive knowledge can be communicated between knowers, using rules and procedures that can be agreed on as being independent of the preferences, beliefs, etc. of the individual knower. The archetypical example here is of course mathematics: the result (such as the validity) of a mathematical piece of reasoning is not dependent on emotional referents, such as the personal preferences or religious beliefs held by the recipients. On the other hand, aesthetic preferences and moral judgements belong to the non-cognitive do-

main. That is to say, they are dependent on emotional referents that are personal: the knower may decide that he likes (or dislikes) a particular piece of music, or that he approves (or disapproves) of a particular act of moral behaviour; but there is no way he can convince another knower that he too must like (or dislike) this music, or that he must approve (or disapprove) of said moral behaviour.

« 35 » Furthermore, the relationship between religious belief and atheism has been discussed by several commentators. The overall conclusion can be drawn as follows: RC asserts that *any knower* will construct her own personal ontology. This personal ontology may then incorporate the idea of a God, and the context in which He appears; in this case, she will be a *believer* in some religious doctrine. (Note that this will be non-cognitive knowledge for her, i.e., part of her experiential world, but with no way of communicating it to someone who has not gone through the same experience of sharing.) Or, alternatively, the knower's constructed ontology may not incorporate a God. In this case she will be an *atheist*, in the meaning of RC. She does not claim to know that God does not exist, but rather that there is no such concept as a God in her own constructed ontology, and hence all questions pertain to His existence will be meaningless to her.

« 36 » Several of the commentators point out that the issue of "mystical philosophies" is not given adequate treatment in the target article, and various passages from well-known proponents in the field, such as Ernst von Glasersfeld and Heinz von Foerster are cited. I must accept this criticism: the brief mention of Zen and other "Eastern" spiritual traditions in the target article does not meet the need to include this topic in a more detailed constructivist context. This is a work that still remains to be done.

« 37 » In this connection, it is natural to ask: Can the distinction I am suggesting between cognitive and non-cognitive phenomena work for sets of people who have different criteria for what "rules and procedures" means? I tend to think that in this case, one would need to establish a *common set of references* as part of new "rules and procedures." Such common references would then of course have to reflect the different criteria for acceptable rules and procedures that are held by these "sets of people." While at this stage I cannot offer any concrete examples of this, I am confident that this, too, would constitute an interesting research topic.

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