

Chapter 3

Mind, Cognition and Religion

Science and religion are not at odds. Science is simply too young to understand
- Dan Brown, *Angels & Demons*

1. Religion, evolution and the mystical

Religions, soon after they appeared had their effect on the collective consciousness of humankind that shaped their history. Marx had rightly called it 'the opium of the masses'. He probably meant the manner it takes possession of their rational selves and makes them accept the unknown and the mysterious. Their hold on the human psyche is all pervasive and distinct. To such an extent that two types of humans emerged i.e. believers and atheists and the rest is history. God of course is not an empirical fact since our current definitions of empiricism does not allow this category to be included. Applying our cartesian mind, we know that we need evidence for every bit of our beliefs, emotions, sense of awe and mystery each moment. But the, the believer is not interested in this analysis. For the believer, the object of the belief is true and present. The chapter aims to understand the cognitive science religion, a well-established domain of scientific inquiry now with many theories and applications. I will not address much why and how religions evolved but what they do to the minds of those who practice them. Or alternatively how the modern mind engages with religion knowing fully well that we have accepted a rational and objective world view post the scientific revolutions of Copernicus and Galileo. Our collective thinking is that any believe in the mysterious and unexplained is an insult to the modern mind. What we don't see, does not exist. But that is only for a fragment of the populations. Religions have steadily grown ever since and there are many believers who even are rational and scientific. Then it must be doing something else to our minds which needs to be explained. That is why it is important for us to look at religion as the oldest mind training device which has adopted so very well through transitions of human history.

Religions are a product of the human mind and consciousness. Therefore, they should be studied within the mind and brain sciences. Throughout history, different religions influenced different aspects of cognition. For example, while Buddhism aimed at enlightening the soul through self-examination and renunciation of worldly passions, Hinduism emphasised humanity beyond the individual and afterlife. Christianity instilled the hearts of its followers with piety and forgiveness and Islam again brought back the absolute faith in the all-powerful creator. More later religions and their subsidiaries have worked on one or more of these core attributes. We seem to think that Religions brought culture and civilization to the polytheistic pagans. Just as the early Christians changed the warrior Vikings from pagans to cultured folks. The rituals, scriptures, buildings for gods, art, prayers, everything came along to make the religious experience worth

living for. Religions apart from their fanfare and relics modified core aspects of human cognition forever. Under the pretext of providing guidelines for a virtuous and regulated life, they moulded the cognition to make life more meaningful. It was all about bringing neuroplasticity to the attention system by training both attention and emotion including cognitive control. The religious mind accepted the unknown and the mysterious for eternal peace and tranquility. Human mind developed two modes of functioning i.e. questioning its place in nature or accepting itself as a creation of the almighty that it never saw. But this has never been the either-or type scenario. Many significant men and women since the modern world began have maintained this contradiction in their creative lives. Let's take the example of Leonardo da Vinci. When his two diaries were discovered at a library in Spain in 1964, after some five hundred years of their being written, it revealed Leonardo the military engineer and natural scientist. Innumerable drawings and sketches and mechanical models were there of machines that he wanted to create with mathematical details and plans. The same Leonardo painted the last supper, one of the most famous religious frescos ever painted (Kemp, 2007). Influential commentators on Leonardo who have studied his notebooks (some 6000 pages of all) have noted that he never differentiated between science and arts, his engineering and his reverence. He saw his creative forces as a totality. The disciplinary fractions that we see today, the specializations, are a much later development. Therefore, it is essential to examine the very origin and source of this bifurcation in relation to mind. This contradiction in human nature that operates between the thin boundary between reality and mysterious is the ultimate goal of cognitive science to explain.

Why might have religion evolved and why has it become such influential in human affairs? There is no human community probably that does not have some form of religion or cult. Progress in science and literacy has brought changes to the styles of peoples' attachments to religion. Religion could be the byproduct of the mind's evolution itself. Which modules of the mind led to religious sentiments? There is little consensus on the exact timing of the origin of religion as an organized social phenomenon. Development of group-level collective social cognition was likely conducive for its evolution. It is possible that religion evolved because it helped forge useful group level solidarity (Bulbulia, 2007). Contemporary studies in the field called cognitive science of religion look at psychological processes like attention and working memory that might play important roles in reverence and emotions that one sees in believers (eg., Colzato, van den Wildenberg, & Hommel, 2008). Models of cognitive psychology and neuroscience explore the brain produces and entertains belief. It has practical significance since a many times belief turns into violence.

The conflict between religion and science is the conflict between material and the non-material. Religious belief recommends entertaining the transcendence in an otherwise material world. Religion raises above the Cartesian distinction between mind and matter. At a very fundamental le-

vel of analysis, religion begins when people ascribe agenthood and animacy to natural phenomena. The myriad artefacts, objects of rituals, relics and iconography used in everyday religious practices suggest this. Probably, along with the ability to focus for objective knowledge, the human mind evolved this ability to entertain transcendence and the mysterious. That phenomenology stayed on with continuous evolution of our species cognition. It's difficult to say if this was a byproduct of cognitive evolution like language or more specific. Early ancestors wanted to project animacy to things and objects in the environment and also to the invisible (Guthrie & Guthrie, 1995). The phenomenology of the transcendence mixed with a feeling of mystery of existence led to the religious mood. This required suspending information gathered through the rational mind, the objective facts of nature and a tendency to ascribe animacy to the unknown. Barrett (2000) has proposed that the human mind developed a "Hyperactive agency detecting device" which was used as a radar to find out potential agents in the environment. Alertness towards agents was helpful for survival and planning. This tendency led to ascribing agenthood to objects that were not even there. This became the foundation of belief structures attached to the unseen and elicited reverence. A short narrative from an Indian mystical figure will illustrate this.

When young Vivekananda asked the mystic Ramakrishna to show him God who he claimed to have seen and talked to, Ramakrishna provided evidence of this. Countless narratives exist on this episode and has been part of the stories Indian cultural tradition. This demonstration led Vivekananda's acceptance of God while he was still an atheist. Vivekananda's acceptance of God then probably depended on the change of his own belief. Of course, Ramakrishna was not referring to the appearance of God as an agent that he saw himself and was willing to show to Vivekananda. There was no God in any form but only in his mind. Vivekananda's "seeing" has been interpreted variously since and has been a legend of India's spiritual history. How does one explain this? It was the awakening of some kind of God module that Ramakrishna tried to instill into his disciple. Religious experience probably can't happen if one is unable to activate this module to ascribe agenthood to inanimate unseen objects and believe in that experience. Vivekananda then represented India at the world congress of religions in Chicago and later wrote many books. Importantly, in this case, Ramakrishna himself did not become God as it has happened in other religions. He wanted to transplant an experience which he knew well and which was non-material (Majumdar, 2016). Thus, cognitively speaking the awakening of this stable perceptual structure was the foundation of belief.

Mind's ability to entertain the supernatural is behind religion's success. Since the dawn of the scientific age, the enormous emphasis has been given to rationality and objectivity. One would assume that given the rise of science, religion would disappear at least from the advanced countries that have tilted more towards objectivity. The modern mind is trained to believe that an objective analysis should penetrate every walk of life. An educated and scientific spirit should re-

peal the irrational fears as well as mysticism. There is no place for unfounded beliefs and emotions in the scientific age. Rational intelligence and objective knowledge are the complete opposite of supernatural beliefs (McPhetres & Nguyen, 2018). Interestingly, however, all forms of organized and non-organized religions, cults, and assemblies are on the constant rise throughout the world even though there has been great progress in science. Man still believes in the mystical forces of God even when he has gone to space and touched the soil of Moon. The United States may be the world's most advanced country with regard to investments in science. Yet, overall scientific literacy in that country is lower than others (Miller & Prado, 2000). Interestingly data suggest that religion has played an active role in many states on matters related school curriculum, laws on abortion, vaccination etc in USA. Recently Texas banned all kinds of abortion since its anti-Christian. In 2015 Texas also had banned a review of teaching creationism to school children. China has been cracking down believers since long and bans or prosecutes all kinds of collective activity (Potter, 2003). Interestingly,, there has been growth of some religions in China post-Mao's cultural revolution. Since some form of Protestantism has been conducive for the capitalistic agenda of China after the revolution (Sun, 2017), although communism is against all forms of religions. Therefore, we can't say that the rise in science diminished religions across the world. The pattern shows that in more technologically advanced countries, both rational objectivity and religious beliefs have parallelly evolved and stabilized. Therefore, there is no a priori theory which will predict a decrease in religious sentiments and a rise in atheism in a world that is largely ruled by modern scientism. Can science throw light on this paradox?

The human mind's Richard Dawkin's *The God Delusion* is a cult classic on the new atheism (Dawkins, 2006). Dawkins supports the idea that religion might have evolved as a byproduct of the more general evolution. Therefore, there cannot be any scientific objective ground to entertain a supernatural god and mysticism. Many liberals also tend to be atheists. Some have also proposed that atheists and liberals have higher intelligence than believers (Kanazawa, 2010). The rise of atheism in earlier centuries has been attributed to both Darwinism on the one hand and also to social theories of Marx and others (LeDrew, 2012). Social change and modernity led to the search for greater objectivity. Does atheism reflect the rise of the new scientific mind? H. Allen Orr had attacked Dawkin's book in the pages of New York Review of Books calling it amateurish propaganda and non-serious (Allen Orr, Jan 2007, New York Review of Books). It did not prove the non-existence of God for the atheists in any serious manner. In response, Daniel Dennett attacked Orr claiming that Dawkin's book was a popular one and was not intended to be a treatise on religion (Dennett, May 2007, New York Review of Books). He further said that Orr and the likes of him were trying to protect a religious world that is fast disappearing. Dennett's collusion with Dawkins fits well with his materialistic behaviouristic theory of mind and cognition. God can not emerge in a mechanistically explained world or brain. If beliefs, mysticism and the supernatural has to be accepted as products of the mind then consciousness and the many

other folk psychological attributes have also to be accepted. Dennett has always been a champion against mentalism and also broadly folk psychology. Dawkins accepted that emergence of religion could just simply be the emergence of natural consciousness. Therefore there is no need to invoke the supernatural or mystical.

Naturalizing religion would allow it to be explored in the brain. Dennett likes to think of religion as a natural activity of the mind. Nothing supernatural about it. By natural activity, Dennett means what people claim about being religious is what happens in their brains. We can study religious experiences as a product of the brain without reference to the supernatural. But, what about the qualia associated with being religious? Current neuroscience has not explained subjectivity. Religion could be a tool to study cognition (Bulkeley, 2005). Religion as an evolutionary adaptive brain function that relies on important brain networks subserving emotion, mental imagery and belief as seen in brain activity (Kapogiannis et al., 2009). However, with this approach the evolution of organized religions can not be understood without going back in time and explaining the evolution of pro-sociality and group solidarity. Whether they have always led to peace or conflict is another matter. But religions certainly manifest a very high-level evolutionary adaptation towards large scale collective cognition (Atran & Henrich, 2010). Religion was beneficial from a material and economic point of view since it involved collaboration. Therefore, religion could be viewed as a co-product of cultural evolution that had a wide range of advantages to its practitioners. Thus, the materialistic scientific view of religion as a byproduct of brain's evolution can't explain its pervasive effect on all spheres of human activity.

The natural attributes of the mind were conducive for religions (Bellah, 2011). These attributes like socializing, inferring, repetitive behaviour, mental imagery etc. are seen in many other habits that we have. Therefore, the human mind had all the psychological tendencies that make faith and belief possible. Children show fascination with magical characters and avatars and take them as real. Humans can entertain false belief and attach values to problematic things. Conceptually, as a group, they can see god where there is none. For example, the emergence of the holy thugs of Venezuela as gods with their own shrines (*Holy thugs of Venezuela*, VICE documentary). Many have now taken to worshipping these criminals that were murdered by Police recounting their loves as full of sacrifices. The followers have now rationalized them as local Robin Hoods and pray to them for guidance. This phenomenon which is seen in many other cultures just can't be mindless hallucinations for the supernatural. It has some well defined cognitive and social attributes. The less literate and economically powerless strata of the society have always shown higher vulnerability towards such practices. Sociologists explain this bizarre group behaviour as a result of declining living standards in that country and also to high rise in criminality. Therefore, a careful study of the human mind and its attributes should reveal the foundations of reli-

gion. Evolutionary psychology, cognitive archaeology and Neuroscience today have techniques that can throw light on this (Boyer, 2008).

My idea is to touch a few topics, often sensitive, that may hang together and look at them from a cognitive science perspective. I will later digress towards violence seen in religion since it is unavoidable. At times I will also comment on the contemporary orthodoxy that being politically liberal, atheist and scientifically minded is the most virtuous form of living one can aspire to. The quantum of people who have been such and who have been committing suicide being purposeless and faithless is too high. The calls of scholars like Dawkins for the complete abolition of organized religions should be examined sceptically. It is not a question of creationism vs evolutionism and restricted to the metaphysical discussion. The calls to throw religions out of the window as a hindrance to the modern mind can ignite many and cause violence. Modern science which began and took shape around the sixteenth century first had the most serious conflict with religion. However, believers have been around ever since the time of hunter-gatherers probably started their agricultural revolution. Contemplative practices began gradually for other cognitive reasons. As I write this liberalism is riding high in many prominent democracies of the west. They have been on bloody fights with conservative nationalists who now rule many countries. When Descartes divided all the stuff into mental and physical, he essentially separated the believers from the non-believers. The rise of scientific materialism since that time that has dominated western thinking is a clear outcome of such a division. Whenever there have been calls to throw belief and all metaphysical non-sense branding them simply folk-psychological, there has been resistance. For example, the fate of the eliminative materialists (Churchland, 1981) in the philosophy of mind who claim that all that is there is matter. Therefore, the cognitive science of religion is an enterprise that should start from the early stages of human evolution and come all the way via the enlightenment and the scientific revolutions to the formation of liberal democracies and industrial capitalist societies. Since this is the true evolutionary trajectory of the human mind since at least the last two thousand years. The idea that God does not exist viewed from a modern scientific perspective, the only perspective that's allowed according to Dawkins and Dennett is not an answer to how we have evolved as social beings living in communities.

Religions have played a key role in forging this harmony. Thus, I will not tackle the question of god or struggle with Dawkins but will look at religions as organized collective cognitive activities that first and foremost show gradual evolution and sophistication of human social cognition. To me both scientific materialism and blends of die-hard liberalism and atheism in the name of being free-spirited and inquiring all forms of belief structures, all form collective groups with agendas for social and political power. At this stage, it no longer remains the questions of God's existence. It appears just smock screen for some who really want to further their own agendas within the socio-politico structures while claiming all along with virtue and objectivity. I say all

this at the outset since I do not believe that any true cognitive science study of the religious mind can remain bipartisan for long.

2. Religion and cognitive systems

Can cognitive psychology explain mind's capacity for religion? Collective attention lies at the very foundation of organized religions and the effects they produce. Understanding the cognitive science of religion would require models of collective attention. At this moment all such models are based on data collected from individuals. This methodological drawback does not allow theorizing on group effects. Both peaceful and violent outcomes of religion are group effects. Organized religions are like musicians playing a great symphony under a master conductor. They play individual instruments yet they have a common goal that keeps evolving throughout the symphony. Religions show how well the human mind has evolved to synchronise with other minds. It is one of the finest manifestations of our social mind. It is both biological and social. Whatever humans have been doing since the beginning is an outcome of nature-nurture interaction. Whether we were originally designed to be moral and religious is a difficult question to answer given the data. Studies with higher primates do show that they show empathy and also some social cognition. But nothing like religion. No animals are found sitting in contemplative postures thinking about themselves.

At first, the attention system evolved to find basic things around, help in hunt and flee and maybe to remember. Then it helped to create art, symbolic art (Chapter 2). With the growth in organized cultures, population, objects, and other stimuli (including many animals), there was an overload. In such a scenario, to reduce the cognitive load, attention adopted to be more selective. Brains higher control systems evolved to allow some flexibility in the manipulation of attention. In the early stages of human evolution, this load was more external and environmental. Which animal to hunt, which animal is more dangerous, which wall of the cave to paint, and so on. I recommend Wynn and Coolidge's excellent book on human cognitive evolution to get a good summary of this period (Coolidge & Wynn, 2018). However, religions evolved much later, probably with the evolution of social cognition and the mind's ability to struggle with higher-order metaphysical thoughts. It also evolved to calm the mind amid the flux of stimuli that were more internal with some moral education for a good life

In today's internet age millions of people are paying attention collectively to the same information even when they are dislocated physically (Wu & Huberman, 2007). Televised religious sermons similar to soccer matches attract the attention of millions together. When people see performances together with their brain activity show synchronization over time (Pollick et al., 2018). Collective attention has been evolutionarily helpful in the formation of culture and has supported innovation (Muthukrishna & Henrich, 2016). Human cooperation and collaboration on

a massive scale require collective attention. The key question is how the individual can maintain rational control of the mind within a large group's collective goal? Mass mobilizations must mean some kind of suspension of individual rationality. The extension of western liberalism, individualism and scientific awareness is precisely in a collision against religions since they have fundamental differences with regard to individual vs collective goals. Religions demand a kind of suspension of individual goal for a larger collective purpose linked to the supernatural, guided by someone who claims to know more about such things. Atheism gives the individual all the power to reject such things and take decisions.

Why did the mind become contemplative? Was it to calm the mind from the growing numbers of stimuli and complexity? The question of what religion does to the mind is different from how religion arose. Cognitive science of religion examines the effect of religion on everyday cognition and behaviour. On the surface, believers and non-believers, of course, appear different. However, practitioners of specific religions look at the world uniquely. This unique way of perceiving reality could be because of deploying attention to objects and features differently. Let's examine two well-known religions and see if their followers differ cognitively. Calvinism began as a reaction to Catholicism by John Calvin in Switzerland. Its philosophy is different than mainstream Protestantism. It emphasizes hard work for self-development and encourages material possession for happiness. Many say that even Calvinism is behind Switzerland being a rich nation and the banker to the world. Followers of Calvinism like money through hard work and do not think there is any kind of virtue in being poor. Nevertheless, given these beliefs will Calvinists differ from others in how they attend to things?

The Netherlands has a strong Calvinist tradition since the sixteenth century. William of Orange who waged an eighty years war with the Spanish was a Calvinist. In more modern times, the Dutch have continued to be followers of Calvinism although a majority of them are atheists. The Dutch way of life has a reverence for a few traits that are central to Calvinism. In a study, Colzato and colleagues (Colzato, van den Wildenberg, & Hommel, 2008) compared students at Leiden University who were either Calvinists or atheists as per their self-report. The authors examined if their different religious persuasion would lead to deploy attention differently in an experimental task. Attention can be deployed either at a global or a local level (Figure 1). Navon had first demonstrated this with hierarchical figures (Navon, 1977). For example, in the case of the numeral six written with small sixes, one can either attend to the holistic number or the parts. It's the difference between looking at the forest vs the trees. It is probably the case that we tend to attend to the forest or the big picture before we go more objective and local with our perception. Colzato and colleagues proposed that the Calvinists will deploy more local attention compared to the atheists if they are tested on a local-global attention task. It was indeed the case that the Calvinists deployed more local attention. A similar decreased processing of global fea-

tures was again observed by Hommel et al. (2010, Figure 2). Is this attentional outcome because of religious belief?



Figure 1. Example of stimuli used in Navon task (Watson, 2013). Participants are faster responding when both the global and the local features match (congruent condition: E made of smaller E's) as opposed to when they don't match (incongruent condition: H made of smaller E's).

In another study, the same group of authors wanted to know if religion affects attention control more directly in a comparative study. They compared Dutch Calvinists, Italian Catholics with seculars and atheists on a Simon task (Hommel et al., 2011). The Simon task measures one's ability to suppress a prepotent action. The Simon effect is linked to attention control in general and is widely popular in cognitive psychology and neuropsychology. Calvinists showed a lower Simon effect than the Catholics. This could mean that the Calvinists were capable of suppressing a prepotent action pattern more successfully than the Catholics. The authors interpreted suggesting that Calvinism encourages greater independent decision making and responsibility. Whereas Catholicism is more about a collective style of behaviour and belief systems. One can also say that the Calvinists were not much bothered when the Simon task presented incongruent stimuli. Since they were no more surprised when the stimulus action rules were broken. However, Catholics were surprised and this led to a bigger Simon score. At first glance studies like on a complex subject like religion looks pretty reductive. How does one know if religion influences Simon scores? This is indeed an important methodological point and I say various things about this problem in contemporary cognitive psychology at many places. Here it would be sufficient to say that Cognitive science can only study any phenomenon empirically through tasks. Some amount of reduction remains unavoidable. It has to map and mimic critical and complex aspects

of human behaviour into tasks and measure performance. The varying nature of performance then becomes the data on which theoretical claims are generally made.

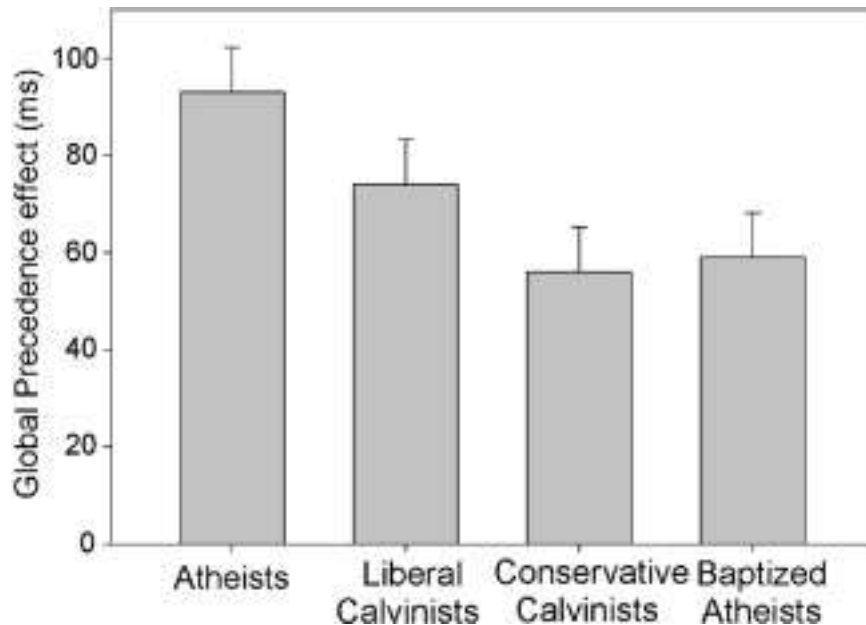


Figure 2. Global precedence effect (GPE) in practitioners of different religions. GPE on Navon task indicates the extent of processing of global features. In this study, Dutch Calvinists showed reduced processing of global information compared to atheists which was reportedly attributed to the Dutch Calvinism’s emphasis on individual responsibility (Hommel et al., 2010)

Why and to what extent someone is religious is not easy to answer. We can guess that it must be psychologically rewarding to the individual who practices it. Any stimuli that are perceived as rewarding also engages the attention network. Research shows that focused attention leads to a sense of happiness. Attentional engagement modulates the affective states of the brain i.e. amygdala (Pessoa, Padmala, & Morland, 2005). Deep and sustained religious practice must act like rewarding stimuli to engage the attentional network along with the emotion regulation mechanism. In laboratory tasks, stimuli that are associated with reward orient attention even when the participants are not aware of them (Custers & Aarts, 2010). This invisible association between reward and attention is an interesting link which can explain why some people are excessively religious than others. In one study researchers measured brain activity in devout Mormons (Ferguson et al., 2018). During the fMRI scanning, the participants were exposed to Mormon religious stimuli. The frontal attention areas, the temporal lobe and other areas were found to be ac-

tive during their religious experience. Attention thus plays a key role in religious experience with its functional association with the reward circuitry. In addition to the frontal areas, the parietal lobe is known to house critical functions related to attention control. Its activation is linked to 'self-awareness' and spiritual experience (Miller et al., 2019). The combined frontoparietal activity has been found for example during meditation practice. Taken together these evidence suggest that engaged religious experience is an attention event and its practice could further develop attention.

Why and to what extent someone is religious is not easy to answer. We can guess that it must be psychologically rewarding to the individual who practices it. Any stimuli that are perceived as rewarding also engages the attention network. Research shows that focused attention leads to a sense of happiness. Attentional engagement modulates the affective states of the brain i.e. amygdala (Pessoa, Padmala, & Morland, 2005). Deep and sustained religious practice must act like rewarding stimuli to engage the attentional network along with the emotion regulation mechanism. In laboratory tasks, stimuli that are associated with reward orient attention even when the participants are not aware of them (Custers & Aarts, 2010). This invisible association between reward and attention is an interesting link which can explain why some people are excessively religious than others. In one study researchers measured brain activity in devout Mormons (Ferguson et al., 2018). During the fMRI scanning, the participants were exposed to Mormon religious stimuli. The frontal attention areas, the temporal lobe and other areas were found to be active during their religious experience. Attention thus plays a key role in religious experience with its functional association with the reward circuitry. In addition to the frontal areas, the parietal lobe is known to house critical functions related to attention control. Its activation is linked to 'self-awareness' and spiritual experience (Miller et al., 2019). The combined frontoparietal activity has been found for example during meditation practice. Taken together this evidence suggest that an engaged religious experience is an attention event and its practice could further develop attention.

We can't understand the mind of the believer without talking about the non-believer. It's in opposition to the non-believer that what the believer does or feels makes sense. Mind's entertaining of the so called "non-belief" is also some kind of a belief, since it is tied to strong conceptions i.e. there is no god or all conservatives are morally corrupt. There has been a tendency in scientific circles to show that the religious believer's mind is weak cognitively. The fundamentalist who causes violence for belief is even a deranged person cognitively. The solemn studies of Tibetan monks under fMRI in cognitive neuroscience is considered non-conflicting since its only studying their practices of mind training through breathing and not their faith. We will later see how some Buddhists have been into violence while all along they have been training their attention and awareness. Proponents of scientific rationality would say the human mind has evolved to

understand nature, question it and to concur it. The consideration of the supernatural is only a weakness and is seen in some. Atheism comes from Greek 'a' (without) and 'theos' (god). The appearance of the word in the English language probably coincides with the age of enlightenment and scientific progress and seen in the English translation of Plutarch's *Atheotes* (Bullivant, 2013). In contrast to atheists, some religious fundamentalists take belief to another level of extremity. While ordinary believers may be content with spiritualism and its experience, fundamentalists are more into the politicization of the belief.

A group of Polish scientists observed that religious fundamentalists differ from moderates on an important cognitive variable (Senderecka, Kossowska, Sekerdej, & Szewczyk, 2019). The Error Related Negativity (ERN) response in EEG indicates the brain's awareness of errors that one might commit. The scientists asked the participants to do a stop-signal task. In this task, one has to stop responding in certain trials when indicated to do so. Most people perform this task well under normal circumstances in many experiments. However, the ERN response in religious fundamentalists has been found to be much higher. It could mean they were monitoring their errors more and were also distressed by it. Fundamentalists may lack cognitive flexibility. Studies show that devoutly religious people score low on psychological tasks that measure cognitive flexibility such as the Wisconsin card sorting task (Zmigrod, Rentfrow, Zmigrod, & Robbins, 2018). Cognitive flexibility is considered a core component of fluid intelligence. Those who are cognitively flexible can adapt faster to the demands of a changing situation. It kind of makes sense since fundamentalists do not want to adopt to growing social and technological changes in cultures. Would atheists be called fundamentalists who fail to understand the believer's perspective? Most scientists won't explore this since they will say the premise is wrong-headed. They want to prove that being religious is an indication of some kind of cognitive feebleness. Being an atheist means socially and scientifically aware with an open attitude. Liberals and atheists are considered more intelligent since they may have more scientific outlook and open in attitude (Kanazawa, 2010). However, a study of believers and their intelligence in 137 countries showed that this correlation may be weak (Lynn, Harvey, & Nyborg, 2009).

3. Faith and violence

Of course, contemplative practices in different religions were at first linked to attainment of god. One needed absolute focus to feel the power of the supernatural. But Buddhism changed all this in developing it as a kind of technique to approach reality. The Buddhist's mind training methods have remained attractive in spite of changing times ever since. Its popularity has grown since more and more people are now worried about losing their limited attention and suffer from mental stress. Its key method, breathing and mediation apparently offer cure from such maladies. Conceptually also, it offers clarity to many psychological conflicts. Thus, while it is being sold in the west as a mind training method that anyone can take up, we have to remember that it is very

much an organized religion with its own historic strengths and weaknesses. Just like The Roman stoics such as Seneca and others thought that controlling our minds is necessary for the attainment of health and virtue, Buddhist practices offer guidelines for a clean and peaceful life. With regard to the history of the origin of meditation, there is no unanimity among Buddhist scholars. No one knows what type of meditation Buddha himself practiced or he taught his followers given no textual evidence of early Buddhism. Buddha might have simplified and changed the meditation techniques taught to him by his Brahminical teachers like Alara Kalama and Uddaka Ramaputta (Wynne, 2007). But interestingly the very motive to meditate has remained the same since 2500 years, to silence the mind and make it free of delusional thoughts that affect our emotions. Cognition is all that humans have done ever since to know themselves and their world and meditation is one among the techniques. However, the prescriptions for contemplation and peace does not happen in some vacuum. It happens within our social political structures and then comes violence. This aspect of religion cannot be overlooked if we want to get to the bottom of its effects on us. This won't exclude the monks and the preachers of peace or the serene meditators. When it comes to territoriality, political battles, racism, all beautiful things vanish and violence emerges.

There must be some cognitive link between religion and violence. Crimes related to religion are often committed by the fundamentalists. Religions are large scale organized group-level activities. Often it brings together people with similar motives and leads to constructive philanthropic activities. Consider the many good works religious groups do during difficult times like famines, wars and epidemics. Members of any religious group lose their individual rationality in favour of the larger cause. They behave as if in a symphony listening to their favourite conductor. However, the same tendency can lead to large scale collective violence. From a cognitive science perspective, the key question will be if individual attention and control disappear in a group? Collective attention concentrated on a single motive does not belong to any one individual. This can be rational, productive or extremely dangerous. Unfortunately, empirical studies on group level attention are very few. While so far studies have looked at individual level attention, it's not clear how attention works in a collective of people who have a similar intensity of belief and purpose. Researchers in one study examined the basis of support for suicide attacks among religious people. The participants were Indonesian Muslims, Mexican Catholics, British Protestants, Russian Orthodox in Russia, Israeli Jews, and Indian Hindus. Those who attended religious services regularly showed the propensity for support to suicide attacks. Those who just did the prayers but were not that regular did not (Ginges, Hansen, & Norenzayan, 2009, Figure 3). Attending religious services with other likeminded people, of course, enhances prosocial behaviour (Galen, 2012). This prosociality has not been actually studied comprehensively with regard to violence. Just as prosociality can lead to developmental work and progress, it can bind people with similar negative thoughts and can cause great harm.

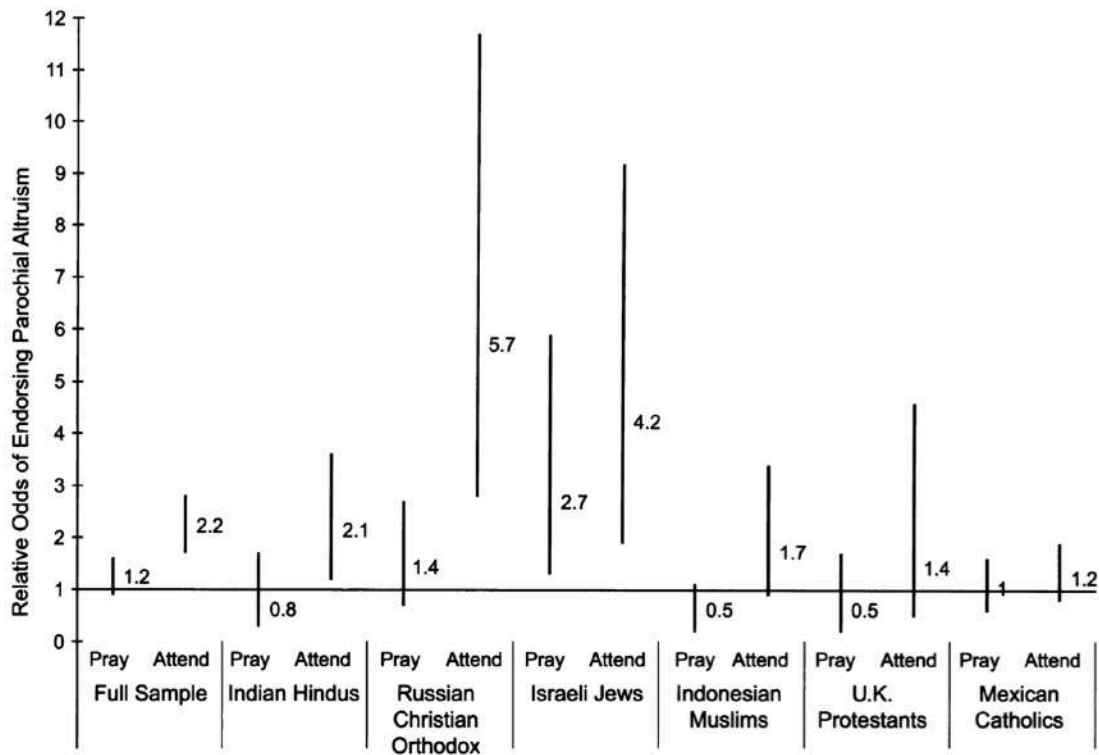


Figure 3. Parochial altruism across different communities. Across all samples, parochial altruism - the tendency to sacrifice oneself for the benefit of an in-group and to harm an out-group - was higher in people who attended religious services compared to people who regularly prayed.

Yuval Noah Harari in his book *Sapiens* (Harari, 2014) offers a clear analysis of the origin and motives of polytheist and monotheist religions. In order to understand the nature of violence tendencies religions it is important to consider this basic difference. Polytheist religions like Judaism and Hinduism accepted an all-powerful and supreme being that did not bother about human considerations. Later, monotheistic religions accepted humans as God. Each cult's God was projected as supreme. The historical violence between Christianity and Islam is the fight between two groups who think their God is supreme and is the creator of everything. Monotheistic religions evolved from competing sects within polytheistic religions. Buddhism and Jainism arose from Hinduism. They are known to preach non-violence and mental introspection. Do they have a collective violent expansionistic attitude like other religions? Facts suggest that the soothing cognitive and meditative posturing of followers of Buddhism does not make it any less violent. Ascribing all violence to the devout and religious with fundamentalist belief would not be parsimonious. It's also widely believed in scholarly communities and the general public at large that

some religions are harmless and propagate world peace. They certainly do so, but at times followers of these religions also engage in violence. Further, It is also not the case that atheists don't participate in violent wars or crimes. Let us consider a specific example which defies conventional thinking on the interface between religion and good behaviour. Buddhists are known to be more philosophically evolved and practice non-violence. They also have a long history of meditation and mindfulness practice. The case of Buddhism is different from other larger and older religions since its adherents preach nonviolence more and are known to be more accepting and compassionate. Recent reports from a Buddhist country like Sri Lanka indicates that they too commit crimes. Buddhist Sinhalese have been at war against the minority Christians and Muslims for a long time. Japan is a largely Buddhist country and but the crime rate at its biggest cities are no less. If different religions induce different types of attention in its believers then why does not that reflect in daily behaviour and control? It is not easy to offer a simple answer to such questions since it is not clear how religions help in emotion regulation. In Myanmar, Buddhist monks are at war against the minority Muslim Rohingyas. In Thailand, monks are fighting Muslims as they are the majority. Many commentators in international media have agreed that although Buddhism is based on compassion and nonviolence, its practitioners are equally vulnerable at political terror. Therefore, any group of religious believers can be fundamentalists and can inflict terror on the minority in their territories. More recently there have been many instances and reports exist of rising Hindu fundamentalists in India and crimes against minorities.

It is the monotheistic religion whose followers often have a missionary purpose. It is not always straight fights and violence that becomes their weapon but also gathering more number of followers under different pretexts. For example, the sects may lure an individual, offering him greater liberty or release from the repression from others. Either way, the tendency to propagate and become larger with enriched socio-political power is seen with these sects. For example, In India often people belonging to lower castes convert to Buddhism (eg., Gokhale, 1986). Many social activists and politicians convince them that upper-caste Hindus are fundamentalists and their emancipation lies in leaving Hinduism altogether. While such conversions are okay from one individual's free will point of views, this is viewed as an attack against Hinduism by a minority group. Specifically, in 1956, there was a large scale mass conversion of Hindu Dalits into Buddhism, on the day of Buddha Jayanti (Deegalle, 2015). What did Buddha himself think of this? Buddha was aware of lay people's attraction towards himself and his teaching. When anyone met him and expressed to follow him, he suggested that they also keep their former teachers and religion. That way he was secular and took a broader world view about faith. The government in Sri Lanka has now passed bills to keep track of involuntary conversions in the country. Even during the time of Buddha, some of the followers committed violence against those who did not want to convert. The early spread of Islam happened through conquest over the Persians in the seventh century. The conquerors used coins that had inscriptions in Arabic on both sides. On one side it

had “There is no God but God alone without a companion.” The other side had “He is God, One. God, the everlasting refuge, who has not begotten and has not been begotten and equal to Him is not anyone” (Koran, chapter 112.). Michel Cook, one of the world's most ____ scholars on Early Islam and Muhammad takes this as the first evidence of Islam’s endeavour for monotheistic tribalism (Cook, 2000). Everyone else had to accept it as it was distinct. Those who did not accept had to face the consequences. This was happening soon after the Death of Muhammad when the Koran was finally in the form of a book of verse in 650 AD.

In southern Thailand where the Muslim population is more than 80% and the Buddhists are a minority, the young monks have taken up arms for self-protection. The government interestingly provides the monks military training equipping with arms. Here again, we see a different face of a monotheistic religion known for forgiveness and peace. Leaving their core doctrine of compassion and enduring suffering the monks take up arms and turn vigilante. It is of course ethically right to do everything to save one’s life but then what about the teachings of religion? The monks do their regular dhamma but also fight with state sponsorship (Michael Jerryson, 2011). While Buddha understood that by mind control and correct interpretation one could understand reality and probably be happy, he also knew that his subjects are human beings after all. He knew that his rational teachings could only go thus far. Therefore he did not object to violence for self-defence (Gray, 2007). Every young man in Thailand has to be a monk for some years and renounce everything mundane. If renouncement of worldly concerns is central to Buddhism, then violence has no place. There are many instances in literature where violence has been preached by Buddhists (Hinnells & King, 2007). It is time that cognitive scientists look at both aspects of such cases and study them. More critically study large scale cognition that really affects our everyday lives. Unfortunately, apart from some social psychological studies on this topic, nothing much exists. I have given these references from contemporary happenings since religion is such a big deal. Therefore, naturally, it becomes our responsibility to explain. How come the peaceful mind entertains conflict, commits violence while preaching peace?

Ancient Japanese samurais were also monks. They spent their days in meditation and esoteric practice but were also tireless fighters. They unified the essence of a calm fearless mind with the toughness that allowed them accept death easily. The evolution of Zen has played a key role in Japanese culture, wars, nationalism, poetry, tea ceremony (Suzuki, 2003). The Samurai warriors were practitioners of Zen. How could Zen be about violent aggression and wars? The western understanding of Zen as a peaceful meditative practice in serene monasteries and gardens is what the public thinks of it. Brian Victoria’s book *Zen at war* in 1997 highlighted the military past of Zen. Zen leaders of Kyoto’s famous Myoshin-ji shrine of the Rinzai Zen Buddhism in 2001 issued a public apology for past crimes committed by Zen monks. This past includes military expansionism, brutality and crimes against innocents. How could a Zen state of mind that

aims for Sartori (calm meditative state) be violent? Knowing this past is important since today millions of practitioners of Zen use it as a mind training program. However, we can not overlook the deep metaphysics within which Zen evolved in Japan in ancient times. Ancient Japanese warriors following Zen did not differentiate between life and death. Usual dichotomies did not matter and they were ready to accept death any moment. In more modern times, Japanese military generals and soldiers followed Zen as a mind training method to be mentally tough against the enemy. The Khymer Rouge leader Pol Pot was a Buddhist monk in his youth who killed millions of his own people. Buddhist tendencies allowed Pol Pot to be psychologically immune from massacres and practice indifference. Quite similar to modern claims that extreme meditation can make one insensitive to emotional stimuli by deactivating amygdala functions (Cebolla et al., 2017). In Bangkok, pig slaughterhouses are hidden far away from public gaze, since they are banned and the butchers are catholic immigrants from Vietnam (Osborne, 2009, Forbes). Killing animals is not sanctioned in Buddhism but around the world, meat is eaten by Buddhists. Thus, if we look around many contradictions are found with the professed ethical behaviour of a religion and what actually happens at times.

The Amish are found in many states in rural America who come from a Swiss-German stock. They are known for their isolationist way of life and rigidity in religious behaviour. The Amish value traditional lifestyle and do not approve of modernity. They do not marry outsiders and make every attempt to stop any social intercourse with the non-Amish population. This is an example of a religious community that stays amid one of the most advanced and liberal countries on the earth and yet maintains isolation. The Amish still use horse driven boogie carts for transportation and go to their own schools. Interestingly data suggest that they enjoy a high standard of living despite such lifestyle and belief systems (Cross & McKusick, 1970). Multiple reports on Amish show that they have low levels of cognitive disorders such as Autism and dementia. Maintenance of pure genetic stock, high level of lifestyle and nutrition and lack of outside interference may have been the reasons. However, crime among the Amish is on the rise. In 2013 there was an interesting case in where a group of Amish members were accused of cutting beards of members of the other group because of their rebellion (Green, 2004, The Atlantic). Torah Bontrager in her book *An Amish girl in Manhattan* recounted how growing up in an Amish community, she was raped for many years by her own men folks of her own family (Bontranger, 2018). Low level of education, a closed-door devout culture and submissiveness make women vulnerable to crimes in such communities. Therefore, a devout religious attitude is no guarantee against crimes. Similar stories one can find about the members of Mormon Church.

Large scale violence and inhuman acts require an extraordinary amount of goal-directed attention and indifference towards emotions. Although many study attention in emotion regulation in college students using simple stimuli, studies on criminals and fanatics who carry out acts such as

suicide bombing are few. Most often they execute these acts for a cause. For the religious fanatic, this cause goes beyond individualism towards the benefit of a group of people, even a nation. Again studies show that an extreme nature of goal-directed attention is behind such acts of terror (Kruglanski et al 2019). Once goals are set and clear, the agents try to rationalize, not to suppress them. Complete involvement with a goal has been shown to shield any inhibition that can operate at the level of awareness. Most who join violent groups and carry out suicide missions have an ongoing schema of inhibition that they do not perceive. Kruglanski et al (2019) cite a story about recruiting methods of suicide squad of LTTE members that's worth considering. When new members come to join this group first they are asked to walk through a foyer. Later they are asked what they saw or noticed during their walk and waiting. Those who report very minimal stuff are considered. This means that those who could not notice anything were fully engrossed with their cause and were judged as fit to join the mission. Thus, selective attention either to an all-important individual or group cause can inhibit all other rational considerations. This also fits with data that are now coming in that show negative effects of excessive meditation.

Taken together, the examples I have cited suggest that purposeful attention to a cue can lead to both bad or good things. While we study many dimensions of attention using experimental paradigms, we have not yet come to grasp its enormous societal implications at a collective level. The facts I have mentioned are discomfoting of course. That is because we often build our theories around prevailing clichés. For example, Buddhists are non-violent. Cognitive science of religion has to study both good and bad aspects of such practices using modern experimental methods. This includes also understanding negative aspects of excessive meditation. At the moment all studies on such methods are about the positive influence which certainly can't be true. And the effect of religions and their effects on human mind can't be understood in any de-contextualized manner. It has to be understood only in the collective societal scenes. How people use revisions to further their own interests and survival.

4. Opium of the masses

What's the future of cognitive science of religion? We have no idea about the stage where we are now in our cognitive evolution. We just can look back our histories that have records in skull and cave art but no data on cognition. Cognitive archaeology is throwing light on the evolution of cognitive mechanisms such as attention and working memory and fix timelines (Wynn, 2002). This timeline is very recent. Selective attention and working memory might have evolved just some 40000 years ago. Humans started agriculture and domesticated animals and lived collectively some 10-12000 years ago. Thus, cognitive evolution is in its infancy considering the timeline of the evolution of homo sapiens. Therefore, the overconfident certainty of the materialists about the centrality of objective facts governing our cognition and rational lives must be viewed with some suspicion. This could as well be a passing phase in the interesting trajectory of mind's

own evolution into something else. Thomas Nagel, famous for his landmark paper on bat's consciousness, and a dualist, has called for a second scientific revolution (Nagel, 1974). This is a few steps ahead from the old-style thinking of traditional biologists like Dawkins and behaviourists like Dennett. Therefore the cognitive science of religion has to work at this interface of traditional thinking governing our scientific attitudes since the sixteenth century and the new world that's shaping up with the internet age. We have to explain with best of our scientific knowledge why a cult-like Mormonism is on the rise in the most scientifically advanced and liberal democracy like the USA? The question is similar to the way Jaewong Kim asked how can the mind exist in a material world? (Kim, 1998). Thus, to me, the existence of religions or even their rise does not pose any contradictions to anything but only shows some fundamental and invariant aspects of the human mind. Its essential cognitive obligations both at an individual and collective level. Thus, the rejection of religions simply from a materialist traditional scientific angle is premature. This should not be how a cognitive scientist should look at and study the religious behaviour of people. He must have suspicion both towards extremists who spread violence as religious agenda and the nihilist liberals who spread misery and doom in the name of objectivity.

Importantly, we can not study religions as global phenomena. Every religion has adopted itself to suit local needs. For example, Islam in India is not the same as Nigeria. Just like our ethnic and cultural styles, our cognitive skills have also evolved to suit our local conditions. But today in the age of rapid mobility and immigration and globalisation, there is no such thing called local. We have though cognitive psychologists talk of holistic vs analytic styles of attending in the west and the east. If we saw that religions influence cognitive processing then we should also study how that operates locally. Religions that shaped cultures for thousands of years are changing. The Japanese rose as a strong capitalist country post-second world war and also have preserved their cultural heritage such as Zen. It is not the same now with the younger generation who are becoming video game addicts and isolationists. Suicide rates among the young are very high in this country. Technological progress more than anything has put unachievable demands on our cognition. We were not created to sit endlessly with our laptops engaged in e-commerce or texting. It is an interesting question if future humans will evolve strong attentional and visual mechanisms to survive these demands. As of now, the internet epidemic is on in many advanced countries. It's being classified as a disease just like any other. Given this scenario, ancient religious practices that include meditation have a future. But again, cognitive demands on people are cultural. Attentional demands in New York is not the same as India or china. Illiterate people in India who can't read or write are glued to videos and images on their mobile phones. Illiterates have their own cognitive deficits. There is no way to objectively measure country by country demands of attention in any manner. But demands are certainly much higher in developed industrialised countries. The current global rate of ADHD is 5.2. % (Smith 2007). In Beijing, young office workers who slug endlessly stay almost underground in cheap squalors. Their only pass

time is being hooked to the internet. Lack of socialization and erosion of their culture leads to mental conditions. This is the country that once expanded Buddhism (before the communism). It will be interesting to see the future with this trend. Religion always plays a role in the background in such human endeavours.

Will growing capitalism and technological power wipe out religion? Atheism is on the rise and it correlates with social, cultural and technological changes (Pew Research Survey). But religious fundamentalism is also growing proportionately worldwide blended with politics. Cognitive science can't predict this with any certainty. The older intuitive and automatic aspect of the mind is at war with the newer rational strategic mind. It is just not about the future of human rationality and liberalism. We are seeing a rapid collapse of important social and economic orders such as multiculturalism. Humans are becoming more watchful of their tribes and erecting walls. Political nationalism is blended with conservatism and religion. Science is just a faith just like others. The tagline science is at war with religion does not mean much. Amid all these the collective future of human cognition and its shape remains an important question to ponder.

Religion is the opium of the masses. The essential idea behind this saying is that religious belief unites people who otherwise may have different views. Religion builds solidarity, unites people and can at times induce mass schizophrenia. One can consider examples of the likes of Jim Jones and other cult leaders. At the moment the world is battling a novel virus that attacks the respiratory systems killing thousands. Hundreds of deaths are being reported daily from so-called technologically advanced countries who have had more edge on science and industry. Countries have declared lockdowns fearing transmission and a desperate measure to check spread. A new phrase is going around called social distancing everywhere. One must stay far away from other human beings who could be a suspected carrier of this dreaded virus. Apart from the European plague of the thirteen century and the second world war many say so many people have not died for a single cause. Then, comes belief and religion. I must say at once that we have limited psychological theories to explain mass psychology. What happens when millions are in quarantine in their homes for months as in Italy now and in some other countries. Psychology has always theorised in a limited sample of pre-selected people. Something peculiar is being noticed in this scenario in some countries that must be relevant for our discussion. While the advanced western countries are trying very hard to look at this problem scientifically and plan for the future, some other countries are doing what they know best. Manipulating public emotion linked to belief and religion in the name of creating a collective will to fight the disease.

When the pandemic began, the Indian prime minister asked people to come out of their houses and beat utensils or anything they could find for some time. The alibi was that this would cheer up the brave medical practitioners who are at the forefront of fighting this disease in hospitals. A few days later in another address to the nation, he asked people to light candles or the traditional

Diya as a symbol of our collective solidarity. Of course, we had seen Italians engage in balcony singing to beat the boredom and cheer one another in these dark times. The critical question is what is the significance of burning candles at this hour when the disease is spreading and no solution is in sight. This has to do with the political leaders understanding of mass psychology. Hindus of India have always lifted such things in their daily prayers. However, at this juncture, such countrywide collective act assumes another meaning. It's a belief against a common threat. It's no use of rational objective knowledge or medical preparedness but raw belief. The prime minister seems to have suggested that by doing this we can fight this collectively. It's not known in Wuhan China where this virus originated if people resorted to this tactic. China is not a religious country but India is. Mass psychology at times can give a very different interpretation of things that otherwise are so different. There are of course no links between lighting a candle and fighting the dreaded coronavirus. But most seem to agree that this collective show can boost morale and people can easily survive the lockdown. The economic costs of lockdown in such poor countries and the jobless are another matter. Is this not worth studying within cognitive science? It's pretty similar to the Jim Jones appeal to his followers to do mass suicide in impending doom. It's not that bad but I am comparing the psychologies behind it. The revered leader appeals and the masses do what it takes. The psychological solace is the important thing considered here. The more progressive materialists or rationalists critique this calling it useless. The believers don't care much and continue. This is precisely the ancient struggle between mind and matter. Between reason and faith in times of crises.

Unfortunately, we don't have models to understand why this happens. The atheist has no answer to these things except rejecting it altogether. He will look at science and objective facts. The believer won't look at science but at the mercy of the supernatural forces. Another interesting facet of this is the collective attention. When millions in a country of a billion light candle at the same time in silence their brains become one. They vibrate to the same frequency (only if we could measure this). Like the brains of musicians in any symphony. They have a common goal and a common symbolism. Folk psychological beliefs run high in such a population. If the rate of viral infections by chance recedes many will consider this a result of the collective Diya lighting. Whole countries operate with such collective folk psychology depending on their histories. In the times of such grave pandemics, people can resort to belief more than to science. Ultimately, of course, we know that our scientific knowledge and resourcefulness will come handy in the fight against this type of situation. But belief can always work as a good omen. This can't easily be questioned and it better not be. The current coronavirus pandemic is a historical case in point. In some other instances burying the dead who has been afflicted by this deadly virus has also conflicted with religion. In some countries, the authorities are only allowing a few people to accompany the dead to the burial grounds. In normal days this would be hundreds with lot more rituals. This has resulted in dissatisfaction in people who think that their rights are being stolen. The

dead must get their due share of respect. But science tells that going near the dead is dangerous by any means and must be avoided. Again we witness a struggle between religion and science. Some moral philosophers are of the opinion that if the very old are dying then we can't keep the young workforce in confinement. The classic trolley problem is being called upon. Those who can contribute and have years of life ahead must be given freedom even if it takes a toll. This is an ethical-moral issue and again there are no easy sensible answers. The coronavirus pandemic will go down in history as an important event where science and religion conflicted with each other.

5. Summary

The study of religion and the mind is certainly very interesting. The discipline known as cognitive science of religion has been on the rise that forges interdisciplinary collaborations between anthropology, sociology and mind brain sciences. In this chapter I dealt with some points related to the evolution of religions. But given the fact that religion always becomes a very sensitive topic both creationists and evolutionists have radically different theories of its beguiling. However, religion can be understood at a very fundamental level in terms of few cognitive components. Essentially it trains collective attention which has both good and bad sides. Further studies on both believer's and non-believers have revealed different cognitive processing strategies. In the absence of large-scale studies, we may not be in a position now to explain how religions have shaped cultures and societies. Future studies will take into account this methodological limitation. The studies showing religion's effect on specific types of attentional modulations are very encouraging. That can reveal how it has molded specific types of people and their everyday behaviour. It can explain why some cultures live in more conflict and wage more wars than others. Since the unholy nexus of religion and politics is very ancient, they can't be separately looked at. I also pointed out that the naïve new of some cognitive neuroscientists studying the effects of meditation in Buddhists on mind and attention has probably provided a biased view of the whole thing. It also has to show how come practitioners of such a religion indulge in violence and ethnic cleansing. Science just can't project one aspect of the phenomenon and not consider what is exactly happening at the larger societal level. I deliberated considerably on the very important question of the nexus of religions and violence. We have to explain both human minds exceptional ability to focus on calm beautiful things and also indulge in violence. That conflict has shaped our evolution and created civilizations. Its time cognitive scientists take up the studies of religions very seriously at the broadest level possible.

References

Adams, H., Kleider-Offutt, H. M., Bell, D., & Washburn, D. A. (2017). The effects of prayer on attention resource availability and attention bias. *Religion, brain & behavior*, 7(2), 117-133.

- Atran, S., & Henrich, J. (2010). The evolution of religion: How cognitive by-products, adaptive learning heuristics, ritual displays, and group competition generate deep commitments to prosocial religions. *Biological Theory*, 5(1), 18-30.
- Bellah, R. N. (2011). *Religion in human evolution*. Harvard University Press.
- Bulkeley, K. (2005). *The wondering brain: Thinking about religion with and beyond cognitive neuroscience*. Rutledge
- Bullivant, S. (2013). Defining atheism. *The Oxford handbook of atheism*, 11-21.
- Boyer, P. (2008). Being human: Religion: bound to believe?. *Nature*, 455(7216), 1038
- Cebolla, A., Demarzo, M., Martins, P., Soler, J., & Garcia-Campayo, J. (2017). Unwanted effects: Is there a negative side of meditation? A multicentre survey. *PloS one*, 12(9), e0183137.
- Christoff, K. (2012). Undirected thought: neural determinants and correlates. *Brain research*, 1428, 51-59.
- Chun, M. M., Golomb, J. D., & Turk-Browne, N. B. (2011). A taxonomy of external and internal attention. *Annual review of psychology*, 62, 73-101.
- Churchland, P. M. (1981). Eliminative materialism and propositional attitudes. *the Journal of Philosophy*, 78(2), 67-90.
- Cook, M. (2000). *The Koran: A very short introduction*. OUP Oxford.
- Coolidge, F. L., & Wynn, T. G. (2018). *The rise of Homo sapiens: The evolution of modern thinking*. Oxford University Press.
- Colzato, L. S., van den Wildenberg, W. P., & Hommel, B. (2008). Losing the big picture: How religion may control visual attention. *PLoS One*, 3(11), e3679.
- Cross, H. E., & McKusick, V. A. (1970). Amish demography. *Social Biology*, 17(2), 83-101
- Custers, R., & Aarts, H. (2010). The unconscious will: How the pursuit of goals operates outside of conscious awareness. *Science*, 329(5987), 47-50.
- Dawkins, R. (2006). *The God delusion*. Boston: Houghton Mifflin Company.

- Deegalle, M. (2015). Buddhists on Religious Conversion. *Religious conversion: religion scholars thinking together*, 2497852.
- Ferguson, M. A., Nielsen, J. A., King, J. B., Dai, L., Giangrasso, D. M., Holman, R., ... & Anderson, J. S. (2018). Reward, salience, and attentional networks are activated by religious experience in devout Mormons. *Social neuroscience*, 13(1), 104-116.
- Galen, L. W. (2012). Does religious belief promote prosociality? A critical examination. *Psychological bulletin*, 138(5), 876.
- Ginges, J., Hansen, I., & Norenzayan, A. (2009). Religion and support for suicide attacks. *Psychological science*, 20(2), 224-230.
- Gokhale, J. B. (1986). The sociopolitical effects of ideological change: The Buddhist conversion of Maharashtrian Untouchables. *The Journal of Asian Studies*, 269-292.
- Gray, D. B. (2007). Compassionate violence? On the ethical implications of Tantric Buddhist ritual. *Journal of Buddhist ethics*, 14, 239-271.
- Green, F (2004, Sept). *Violence Among the Amish*. The Atlantic.
- Guthrie, S. E., & Guthrie, S. (1995). *Faces in the clouds: A new theory of religion*. Oxford University Press on Demand.
- Guan, F., Ma, H., Chen, X., Zhu, D., Xiang, Y., & Chen, J. (2018). Influence of Religion on Prosociality: A Priming Study of Buddhist Concepts among Nonbelievers in China. *The International Journal for the Psychology of Religion*, 28(4), 281-290.
- Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. Random House.
- Hinnells, J., & King, R. (Eds.). (2007). *Religion and violence in South Asia: theory and practice*. Routledge.
- Hommel, B., Colzato, L. S., Scorolli, C., Borghi, A. M., & van den Wildenberg, W. P. (2011). Religion and action control: Faith-specific modulation of the Simon effect but not stop-signal performance. *Cognition*, 120(2), 177-185.
- Jerryson, M. (2011). IN BUDDHA'S COMPANY: Thai Soldiers in the Vietnam War. *Southeast Asia: Politics, Meaning, and Memory*.
- Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, & Behavioral Neuroscience*, 7(2), 109-119.

- Kanazawa, S. (2010). Why liberals and atheists are more intelligent. *Social Psychology Quarterly*, 73(1), 33-57.
- Kapogiannis, D., Barbey, A. K., Su, M., Zamboni, G., Krueger, F., & Grafman, J. (2009). Cognitive and neural foundations of religious belief. *Proceedings of the National Academy of Sciences*, 106(12), 4876-4881.
- Kemp, M. (2007). *Leonardo da Vinci*. Oxford University Press.
- Kim, J. (1998). *Mind in a physical world: An essay on the mind-body problem and mental causation*. MIT press.
- Kruglanski, A. W., Bélanger, J. J., & Gunaratna, R. (2019). *The three pillars of radicalization: Needs, narratives, and networks*. Oxford University Press, USA.
- LeDrew, S. (2012). The evolution of atheism: Scientific and humanistic approaches. *History of the Human Sciences*, 25(3), 70-87
- Lynn, R., Harvey, J., & Nyborg, H. (2009). Average intelligence predicts atheism rates across 137 nations. *Intelligence*, 37(1), 11-15.
- Majumdar, R. C. (2016). *Swami Vivekananda: A historical review*. Advaita Ashrama (A publication branch of Ramakrishna Math, Belur Math)
- McPhetres, J., & Nguyen, T. V. T. (2018). Using findings from the cognitive science of religion to understand current conflicts between religious and scientific ideologies. *Religion, Brain & Behavior*, 8(4), 394-405.
- Miller, L., Balodis, I. M., McClintock, C. H., Xu, J., Lacadie, C. M., Sinha, R., & Potenza, M. N. (2019). Neural correlates of personalized spiritual experiences. *Cerebral Cortex*, 29(6), 2331-2338.
- Muthukrishna, M., & Henrich, J. (2016). Innovation in the collective brain. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1690), 20150192.
- Nagel, T. (1974). What is it like to be a bat?. *The philosophical review*, 83(4), 435-450.
- Navon, D. (1977). Forest before trees : The precedence of global features in visual perception. *Cognitive Psychology*, 9, 353–383.

- Pessoa, L., Padmala, S., & Morland, T. (2005). Fate of unattended fearful faces in the amygdala is determined by both attentional resources and cognitive modulation. *Neuroimage*, 28(1), 249-255.
- Pollick, F. E., Vicary, S., Noble, K., Kim, N., Jang, S., & Stevens, C. J. (2018). Exploring collective experience in watching dance through intersubject correlation and functional connectivity of fMRI brain activity. In *Progress in brain research* (Vol. 237, pp. 373-397
- Potter, P. B. (2003). Belief in control: Regulation of religion in China. *The China Quarterly*, 174, 317-337.
- Senderecka, M., Kossowska, M., Sekerdej, M., & Szewczyk, J. (2019). Religious fundamentalism is associated with hyperactive performance monitoring: ERP evidence from correct and erroneous responses. *Biological psychology*, 140, 96-107.
- Smith, M. (2017). Hyperactive around the world? The history of ADHD in global perspective. *Social History of Medicine*, 30(4), 767-787.
- Sun, Y. (2017). The rise of Protestantism in post-Mao China: state and religion in historical perspective. *American Journal of Sociology*, 122(6), 1664-1725.
- Suzuki, S. (2003). Not always so: Practicing the true spirit of Zen (p. 176). HarperOne.
- Van Calster, L., D'Argembeau, A., & Majerus, S. (2018). Measuring individual differences in internal versus external attention: The attentional style questionnaire. *Personality and Individual Differences*, 128, 25-32.
- Wu, F., & Huberman, B. A. (2007). Novelty and collective attention. *Proceedings of the National Academy of Sciences*, 104(45), 17599-17601.
- Wynn, T. (2002). Archaeology and cognitive evolution. *Behavioral and brain sciences*, 25(3), 389.
- Wynne, A. (2007). *The origin of Buddhist meditation*. routledge.
- Zmigrod, L., Rentfrow, P. J., Zmigrod, S., & Robbins, T. W. (2019). Cognitive flexibility and religious disbelief. *Psychological research*, 83(8), 1749-1759.