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Phantom Limbs, Extended Minds and the Decline of Religiosity: A Cognitive and Evolutionary Perspective

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Abstract: The purpose of this paper is to advance a hypothesis that might explain the decline of religious belief and practice among the so-called WEIRD (Western, Educated, Industrialized, Rich and Democratic) populations. The main point of this paper is to postulate a causal relationship between two variables that appear to be significantly correlated: on one hand, the decline of religious belief and practice that has been observed in those populations during the twentieth century, and especially since the second half of that century; on the other, the remarkable growth of their life span during that period. The factor that the author proposes as an explanation for that correlation is the causal link relating to the experience of the death of significant others and belief in the supernatural in such a way that the more that experience happens to be relevant in a population's day-to-day life the more that population will be prone to entertain beliefs in the supernatural, and conversely, the less prominent that experience happens to be, the less inclined that population will be to uphold those beliefs.

Keywords: Cognition, Death, Demography, Evolution, Secularization

For the Lugbara of Uganda death is a frequent and important event. It is frequent in the sense that as the Lugbara live at a very high density of population the incidence of ordinary deaths within a small neighbourhood is high; they occur almost daily within a relatively small area and people are constantly aware of the deaths of kin, neighbours and friends. (...) in Lugbara [death] is an everyday occurrence.
John Middleton, *Lugbara Death*

1 Introduction

The purpose of this paper is to put forward a hypothesis within the framework of the cognitive science of religion that might explain the decline of religious belief and practice in some contemporary societies, specifically, among the so-called WEIRD populations. WEIRD is an acronym for Western, Educated, Industrialized, Rich and Democratic. It was coined by Henrich, Heine and Norenzayan to refer to the kind of population that overwhelmingly participates in psychological research, despite being a minority that represents less than 12 percent of the world population.¹ These people are literally very weird from an anthropological point of view. They have very unique and idiosyncratic characteristics that make them very different from the majority of humans, prominent among them is their weak religiosity.

Without a doubt, this is one of the most remarkable and weirdest features of the WEIRD people. Although it is a quasi-universal trait of the human species, religion has been on the decline among this population

¹ Henrich, Heine and Norenzayan, "The Weirdest".

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for the last hundred years, particularly since the second half of the twentieth century. (Let us set aside for the moment what should be understood by “religion” or “religious belief” in this particular context.). This is a controversial statement since not all authors would accept that there has actually been such a decline.² But as I will try to show below, the somewhat low level of religious belief and practice among the WEIRD populations, comparatively speaking, can be taken as a plausible point of departure.

Despite the fact that these people are quite exceptional, the data they produce are considered by behavioral scientists as representative of the whole mankind. That was the core of Henrich et al.’s complaint in the abovementioned article. WEIRD people belong mostly to what we call Western societies. But not all members of those societies are equally WEIRD: lots of them have non-Western origins, and a significant amount is neither educated, nor industrialized, nor rich. Conversely, wide sections of the population living in non-Western societies have received a Western education, or are rich, industrialized, and live in democratic polities. Thus, like all cultural units, WEIRD populations are a fuzzy category with very permeable space-time boundaries. Still, I think they actually constitute a cultural unit with distinctive features. Unfortunately, we do not have statistics that tell us about the characteristics of this eccentric cultural group. But since most of its members live in Western societies we can take statistics produced in those societies as a rough index of what is actually going on in those populations

2 Is religion really on the decline?

The first question we should address is that of the actual decline of religious belief and practice in WEIRD populations. As I said, not everybody would accept that religion is really on the wane, and some people argue that it is rather the institutionalized religion of official churches that is in deep crisis rather than people’s actual belief and practice. And yet, we do have some quantitative information that does not seem to support this conclusion. I have already pointed out that this information is merely indicative, for it corresponds to a small section of the population of these type of societies and it includes population which is likely not to be WEIRD. According to the data provided by Norris and Inglehart, the percentage of people who professed to believe in God in France, Sweden and the Netherlands (I take these countries at random) went from 75.33 in 1947 to 50 percent in 2001, and those who believed in life after death went from 58.33 in 1947 to 41.67 percent in 2001.³ In both beliefs we can see a significant decrease in the percentage of people who uphold them, even though that decline is perhaps less sharp than what one might have expected (both beliefs even bounced slightly in the last 5-10 years). A similar situation can be seen in the majority of other Western European countries. Somewhat clearer is the decline of religious participation in Britain, France and the Netherlands for the period 1970-1998: it fell from 26.67 to 7.67 percent.⁴ This might give some support to the thesis that it is institutionalized religion that is on the decline rather than religious belief as such. Still, we should not forget what has already been indicated: in so far as these samples inevitably include the non-WEIRD population they will tend to understate the very same trend they actually reveal. In other words, I think it can be plausibly surmised that were they to include only this type of population the decrease in religious belief and participation would be even more remarkable. But perhaps the most outstanding information is the evolution of the aggregate religiosity index for the USA. The aggregate religiosity index is an aggregate magnitude that includes a combination of different variables such as feelings of closeness to God, religious identification, religious attendance, practice of prayer, religious experience, church membership, etc.⁵ Despite the fact that the USA has been traditionally taken to be a country far more religious than Western Europe, what we clearly see here is an incontestable fall in that aggregate index for the second half of the twentieth century, which goes from 117.69 in 1965 to 83.95 in 2005. More recent data collected by Grant for 2013 show that the index of religiosity has dropped to 69, the lowest level of any year.⁶

² Warner, *Secularization*.

³ Norris and Inglehart, *Sacred*, 90-91.

⁴ Ibid., 72.

⁵ Grant, “Measuring”.

⁶ Grant, *The Great Decline*. See also Bruce, *Secularization*, 158ff.

What about the rest of the world? To what extent is the decline of religiosity in WEIRD societies a unique and idiosyncratic characteristic? There seems to be a general consensus that religion is in good health everywhere except among these populations; but do we have any quantitative information to support such a widely-held view? Global surveys should always be taken with a pinch of salt, for it is unclear how a single question might be interpreted by populations with very different cultural backgrounds. Be this as it may, the Pew Global Attitudes Project undertook a survey of religious attitudes the world over in the years 2007, 2008 and 2009.⁷ One of the aims of this survey was to find out how important religion was in people's lives. If we look at the countries from which the people who said it was very important do actually come, the conclusion seems to be inescapable: in Africa it was 86.37 percent of respondents who said it was very important, in Asia-Pacific 87.4 (excluding Australia, South Korea and Japan), in the Middle East 78.67, in South America 55 and in Western Europe plus Australia, South Korea and Japan only 18.22.

3 The explanation of an idiosyncratic phenomenon

Let us move now to the possible explanations. No attempt is made here to engage with the copious literature that the secularization debate has produced in the social sciences. My purpose is merely to contribute to this time-honored scholarly discussion by formulating a non-functionalist hypothesis that might disclose some, so far, overlooked connections. Let me clarify first that I have nothing against functionalist explanations of culture per se as long as we are provided with clear definition of what functions we are talking about. In the case of religion, one of those functions could be adaptation. Be this understood in biological terms⁸ or in cultural-evolutionist terms.⁹ In both cases the existence of religion is accounted for teleologically: religion exists because it fulfills an objective, i.e. it enables humans to live and reproduce in a certain environment by performing some key function, such as enforcing social solidarity, etc. Conversely, religion would cease to exist when that important function is met by another institution.

However, this does not mean that everything in religion must be adaptive. In fact, religions, like any other part of human culture, turn out to be a rather messy blend of different kinds of beliefs and practices, adaptive, maladaptive, functional and non-functional. Therefore, there has to be something else that explains cultural reproduction, apart from adaptive or functional qualities.¹⁰ And by implication, there has to be something else that explains why cultural reproduction quite often fails, apart from the fact that sometimes cultures cease to be adaptive or functional. Be this as it may, the jury is still out as to how religion should be properly analyzed: either as an instance of adaptive culture or as a by-product with no adaptive function, or even with maladaptive effects.¹¹ Arguably, there are adaptive and maladaptive aspects in all religions. In what follows I will try out the by-product hypothesis of human religiosity as applied to the question of the decline of that religiosity. My purpose is to see the extent to which the assumption that religion is a by-product of the mind with no apparent adaptive value can help us understand the decline of religiosity in certain societies better than the adaptationist / functionalist approaches.

But what exactly is religion a by-product of? If, by religion, we understand it to be the belief in the existence of spiritual beings (gods, ghosts, angels, demons, etc.) and the relationships that believers happen to establish with them, such belief is normally explained by the defenders of this hypothesis as a by-product of human mentalizing capacities. All humans (with the exception perhaps of those suffering from some neuropsychological disability such as autism spectrum disorder) explain human behavior in mental terms, that is, as resulting from the beliefs, desires, intentions lodged in people's minds, which are different and separate from their physical bodies – as reflected in so-called universal mind-body dualism.¹² This anthropology holds that minds can exist independently of the physical bodies in which

⁷ 12 *Hopeful Maps & Graphs of Religion in Africa*.

⁸ Wilson, *Darwin's Cathedral*.

⁹ Norenzayan et al, "The Cultural Evolution".

¹⁰ Richerson and Boyd, *Not by Genes*, 148-190.

¹¹ Salazar, "Anthropology".

¹² Astuti, "Are We All Natural"; Bloom, *Descartes' Baby*.

they are normally incarnated. Stated otherwise, it makes the belief in spiritual beings (minds without bodies) believable.¹³ Certainly, belief in spiritual beings is not exactly belief in God or gods. But both kinds of belief are undoubtedly closely related. Mentalization enables humans to explain behavior (and whatever can be seen as the consequence of that behavior) in intentional terms: things happen because somebody wants them to, or makes them, happen.¹⁴ The idea of a god is clearly a by-product of that capacity in so far as it postulates the existence of almighty or very powerful invisible beings, creators of the universe, whose intentions explain the existence of everything there is,¹⁵ that is to say, whose intentions confer meaning upon the world. This is not a minor point. Intentional explanations are by definition meaningful explanations, and these are likely to be more cognitively attractive than merely causal or mechanistic ones, if we take into account how vital has it been for humans since the very early stages of human evolution the understanding of each other's intentions.

Notice that this form of explaining the belief in spiritual beings is a causal, non-functional, explanation. Nothing is said about the possible functions that such a belief might fulfill nor, *a fortiori*, that the belief exists precisely because it fulfills those functions. Mentalization, as an evolved biological capacity of human beings, does really have a function. It facilitates communication and the development of complex forms of social interaction and relationships. But no apparent function can be ascribed to its derivatives, or not necessarily, such as the belief in spiritual beings. That is why we call such a belief a by-product. Now, the important thing to emphasize here is that whereas mentalization must be a human universal (with the exception of autistic individuals that we have already mentioned), that is not the case for its by-products. These latter can be different, or even inexistent, and yet mentalization will continue to fulfill the functions for which it had initially been selected. Again, that is what is entailed in the very concept of by-product. In fact, as I have been arguing throughout, there are some populations amongst whom religious belief appears to be on the wane. In so far as past selective pressures are not responsible for the emergence of by-products, we may surmise that contingent factors, external to the evolutionary process itself, must be decisive in the formation of those by-products, that is, in the formation of both belief and, by implication, disbelief. The question is what these factors could possibly be.

Culture seems to be a likely candidate - for in the same way as it is often argued that religious belief always results from a combination of innate predispositions and cultural learning, the same would apply to disbelief.¹⁶ Without a doubt, cultural learning always intervenes, to a greater or lesser extent, in the configuration of any human behavior. But there is a problem in the culturalist explanation of religious decline. Cultures are historically contingent, hence the more culture is seen as responsible for the production of a particular behavior or attitude the more arbitrary its distribution will turn out to be. This is something that we clearly do not see in the decline of religiosity. Religion seems to be on the wane overwhelmingly in one particular kind of societies or populations, which we have called here WEIRD populations, but not in the rest. Of course, the fact that those populations are less religious than the rest could still be accounted for as a cultural idiosyncrasy of this type of populations that merely replicates by cultural diffusion, like using knives and forks instead of chopsticks. But that is unlikely, taking into account that the quasi-universality of religious phenomena clearly suggests that we are facing something of a much deeper anthropological significance than a mere cultural convention.

So setting aside the functional explanations that I have already commented upon, could it not be the case that there is something special in those populations that accounts for this idiosyncratic development, something that goes beyond cultural arbitrariness? Otherwise stated, following Tooby and Cosmides's apposite conceptualization, it might be a matter of evoked rather than transmitted culture.¹⁷ My strategy

¹³ Norenzayan, Gervais and Trzesniewski, "Mentalizing Deficits". The relationship between mentalization and religious belief, however, is less straightforward than what is sometimes implied in mind-body dualism theories; for it has been observed that autistic individuals are not necessarily irreligious. See Ekblad and Oviedo, "Religious Cognition". I would like to thank one of the reviewers for drawing my attention to this source.

¹⁴ Dennett, *The Intentional Stance*.

¹⁵ Boyer, *Religion*, 148-167.

¹⁶ Banarjee and Bloom, "Would Tarzan"; Salazar, "Anthropology".

¹⁷ Tooby and Cosmides, "The Psychological Foundations", 115-116.

in what follows will be to look at which other particular characteristic of WEIRD populations' environment could have "evoked" the decline of religiosity.

4 A weird demography

Religion in many societies has been quite often associated with specific demographic patterns. For instance, several authors have contended that the fact that religion the world over is on the rise can be explained merely because religious people have more children than the non-religious.¹⁸ Here religious beliefs are supposed to cause a particular demographic behavior, in this case, a high birth rate. What I want to propose now is to reverse this causal relationship: instead of religion explaining demography let us see if demography can explain religion. It is not births that I will focus my attention on but deaths. Because, like fertility rates, the evolution of mortality rates in WEIRD societies is also very weird.

For most of recorded history and in all human societies, life expectancy has been around 40 years. But towards the end of the nineteenth century something very weird indeed began to happen in Western societies. During the following century, and especially since the second half of that century, the average life span of their inhabitants more than doubled: an exceptionally old age in comparison with any other historical period. No human society had ever reached that fantastically long life expectancy. This is a very well-known fact; but the important thing to be emphasized here is how unusual this long life expectancy still is as compared with that of non-Western countries. It is true that life expectancy has grown everywhere to a greater or lesser extent in the last hundred years. But the differences between Western and non-Western countries are still quite substantial.

Whereas the life span of the average Western Europeans has gone from 64 in 1950 to more than 80 in 2010, in Kenya, Uganda and Zimbabwe it went from 43.67 in 1958 to 42 in 2003. Taking into account that this slight decline, which began after the late 1980s, has probably been caused by the ravages of the AIDS virus, in any case life expectancy for these countries never went beyond 56, reaching an average of 53 in 1988. What goes on in those African countries is by no means unusual if we compare it with what has been the normal situation for all human societies, Western Europeans included, for most of their history. Once again, the bizarre pattern is that of Western Europe in the last hundred years, not that of the rest of the world.¹⁹

In what concerns the explanation for this astonishing demography, this is also a well-known story. Universal or widely generalized medical care, scientific advances directly relevant to people's health (penicillin, antibiotics, etc.), notable improvements in general hygiene, etc. they all figure prominently amongst causes of WEIRD demographic evolution. There are also some specific factors that are worth mentioning, for these have been (and still are for the majority of humans) amongst the most horrendous killers for much of the history of our species, and they have all practically disappeared now in WEIRD populations. Two of them are closely related with improvements in medical care and hygiene habits: infant mortality (of children under 12 months) and maternal mortality (death of women from pregnancy-related causes).

The decline of infant mortality in France, the UK and the US for the period 1960-2007 went from 25.33 deaths per 1,000 births in 1960 to only 4.67 in 2007.²⁰ The fall in maternal mortality is equally striking. In 1900 in the UK an average of 400 women in 100,000 live births died of pregnancy-related causes; in 1950 that number had dropped to 100, and in 1980 it went further down to only five. Similar figures can be gathered for the US, even though in that case the sharp fall starts to be noticeable already in the 1940s.²¹ Again, the comparison with data from non-Western countries leaves no room for doubts. In 2015, infant mortality

¹⁸ Blume, "The Reproductive Benefits"; Norenzayan, *Big Gods*, 192; Norris and Inglehart, *Sacred*, 231-239.

¹⁹ *United Nations. World Population Prospects 2017.*

²⁰ Eurostat. *Statistics Explained.*

²¹ *To Women's Health. Maternal Mortality.* It is worth pointing out that both infant and maternal mortality are slightly higher in the US than in the EU, with also a lower life expectancy for the US. Even though the differences are small compared with the situation in non-WEIRD populations (two years on average), they should not be overlooked.

reached levels of 96, 92 and 85 deaths per 1,000 live births in Angola, Central African Republic and Chad;²² as for the maternal mortality ratio for the same year, it still is beyond 500 for most of sub-Saharan Africa. In 2000, the UN estimated global maternal mortality at 529,000, of which less than one percent occurred in the developed world.²³ According to epidemiologist Michael Marmot, a girl under fifteen from Sierra Leone is more than 800 times more likely to die in childbirth than a girl of the same age from Italy.²⁴

Finally, the last mortality index I would like to mention is that of war deaths. Steven Pinker has gathered a huge amount of data on war and violent deaths to support his view that the world as whole is becoming more peaceful.²⁵ Even though his main thesis has been challenged on many accounts, it is undeniable that the number of war deaths in Western countries has experienced a very sharp decline in the second half of the twentieth century. The average of war deaths in conflicts before that time involving the great powers since 1500 (which presumably took place mostly in Europe) was around 500,000 per year, reaching a peak of nearly ten million a year in the two world wars²⁶. Between 1945 and 2000 another 51 million people were killed in wars the world over, but very few of these came from Western countries (practically nobody from Western Europe nor Japan).²⁷ So despite Pinker's optimistic outlook, war deaths are still far too common in many places. We can see that in the thousands of refugees that risk their lives every day trying to get into this sort of peaceful oasis that is Western Europe. But the horrifying brutality of the two world wars that took place in the first half of the twentieth century, mostly among WEIRD populations, should remind us of how recent this warless environment is even for the those populations themselves.

To sum up, innumerable fatal illnesses, infant mortality, maternal mortality and war and violent deaths have kept life expectancy relatively low for the majority of human societies for most of their history. The point I would like to emphasize here is not the brute demographic fact as such but the sort of experience of life and death that this short life expectancy has created for the majority of humans who lived, and many of them still live, in those societies, an experience that I have tried to capture with the quotation at the beginning of this article. In Lugbara death is an everyday occurrence, said Middleton. In light of the information we have just seen, I think we could safely conclude that not only in Lugbara but in the majority of human societies death has been, and still is, an everyday occurrence, for the majority of human societies with the exception of a vociferous minority of no more than 12 percent of the world population, who in the last one hundred years, especially since the second half of the twentieth century, has escaped that dreadful fate. Needless to say, it is not death as such that WEIRD populations have eluded since the second half of the twentieth century, but the experience of death as an everyday occurrence.

5 Death and religion

What relationship can be established between this sort of experience of life and death that has been, and still is, so common in human history and religious belief and practice? And above all, what relationship can be established between the radical change in that experience that has taken place among certain populations and the decline in religious belief and practice so characteristic of those populations as well? The relationship between fear of death and religiosity has a long history that goes as far back as the Epicurean Lucretius, in the first century AD, who already established a connection between awareness of mortality and belief in gods. In Christian theology, on the other hand, there is an old tradition, which goes as far back as St. Paul and that has linked death to the salvation in Christ and hence to final religious fulfilment in eternal life. More recently, it has been a psychological research program known as Terror

²² The World Bank. Data.

²³ World Health Organization (WHO) Trends in Maternal Mortality 1990 to 2015. The situation could be even worse, since a lot of infant and maternal mortalities in Sub-Saharan Africa go unrecorded (Gopal, *A Woman*). For more information on this apparently unbridgeable health gap between the West and the rest see Marmot, *The Health Gap*.

²⁴ Ibid., 36.

²⁵ Pinker, *The Better Angels*.

²⁶ Pinker, *The Better Angels*, 227.

²⁷ War Deaths 1945-2000.

Management Theory that has tried to prove the existence of a causal relationship between certain cultural attitudes and behaviors, religious belief amongst them, and death anxieties²⁸ by applying experimental methods. Interestingly, however, the relationship that these researchers are meant to prove is between *self*mortality salience and religious belief: it is anxiety concerning one's own death that is supposed to be correlated with religious belief. But note that this is not what Middleton was pointing out in the above-mentioned quotation: "people are constantly aware of the deaths of kin, neighbours and friends." That is the death that becomes an everyday occurrence in Lugbara and, it is my contention, in the majority of human societies for most of their history.

As a matter of fact, we do not need any in-depth ethnography to realize that for the majority of human beings anxieties concerning one's own death are not particularly salient in everyday life.²⁹ They could be, occasionally, in the course of a conversation with an inquisitive ethnographer, as a result of the priming techniques employed in a psychology lab, or under the effects of some serious illness. But other than that ordinary people do not seem to be terribly worried about their inexorable fate most of the time. True, that fear could still exist at an unconscious level, in which case some proof or evidence should be provided thereof. Furthermore, if fear of one's own death is at the root of religious belief, and that fear is supposed to be universal, it is not obvious why that fear should be less prominent in some populations than in others. Unless, and this is the point I wish to make, that fear happens to be accentuated, perhaps even eclipsed, not so much by another kind of death anxiety but rather by a death experience that is likely to be far more relevant in people's everyday life: the death of "kin, neighbors and friends," as Middleton perceptively observed. An important distinction should be introduced at this point between death anxiety, be this about the death of the self or the death of significant others, and death experience, which for obvious reasons is overwhelmingly the experience of others' death. Of course both could be correlated in the sense that an abundant death experience might increase death anxiety, but not necessarily. The causal relationship I am proposing here is between the experience of death of significant others and religious belief.

Two questions should be addressed now. First, in what sense is the death of "kin, neighbors and friends" different than the death of any other human being? And second, what connection can be established between the experience of death of significant others and religious belief? As to the first question, an interesting research carried out by anthropologist Ivana Kovalinka and others on a fire-walking ritual in Spain found a remarkable correlation between the heart rate dynamics of fire walkers while they were performing the ritual and that of their relatives and friends while they were watching them.³⁰ They took that as proof that the emotions of closely-related people happen to be subtly synchronized, as if they were all going through the same experience even though only some of them actually were. It is widely known that people are likely to be emotionally aroused by the experiences of others, but the interesting thing about this research is that it shows that this emotional empathy is socially mediated: not all others' experiences are bound to produce the same effect on the self, but it is the experience of those who are most closely-related to the self that turn out to be particularly salient. This could certainly account for the strong emotional reaction to the death of significant others, but it does not mean that this reaction will necessarily lead to some kind of religious belief.

According to the by-product theory of religion above, belief in spiritual beings (the source of any belief in supernatural agency) emerges as an offshoot of the mind-body dualism. In so far as we believe that mind and body are two separate substances, the existence of minds without bodies becomes plausible. Notably, at no other time is this belief in disembodied minds more conceivable than at the time of the destruction of the body itself, namely, at the time of death. In fact, there is a long tradition in anthropology, which goes as far back as Spencer, that already envisaged a connection between the death of significant others and belief in ghosts.³¹ That was a terrifying belief, Spencer argued, originated in the understandable ignorance of our ancestors, who saw dead people in dreams and thought that they still existed in some

²⁸ Jong, "On Faith", 194; Jong, Halberstadt and Buemke, "Foxhole Atheism".

²⁹ Jong and Halberstadt, "What is the Causal Relationship".

³⁰ Kovalinka et al, "Synchronized Arousal".

³¹ Spencer, *The Principles*.

mysterious way despite the fact that their bodies had been buried or destroyed. More modern approaches to the belief in disembodied beings have pointed out how difficult it is for our cognitive system to process the disappearance of significant others:

When it comes to death, human cognition apparently is not well-equipped to update the list of players in our complex social rosters by accommodating the recent nonexistence of any one of them. This is especially the case, of course, for individuals who have played primary roles in our social lives, who did so for a long time, and who were never presumed to be continuously stationary when they were out of our sight.³²

Let me now refer to another phenomenon that, perhaps in a rather astonishing way, may give us some clue as to effects that particular experiences of death might have on some individuals. The phantom limb syndrome is a neurological disorder that affects people who have suffered the amputation of one of their limbs and who still are capable of feeling sensations, even pain, in the limb that no longer exists.³³ Even though we tend to believe that the phantom limb syndrome results from a dysfunction or disorder of the nervous system, the psychologist Melzack published a seminal paper on this topic, in which he insisted that this phenomenon is not viewed as a pathological entity nor due to an abnormal functioning of the brain.³⁴ He noted that it is merely a by-product of the way in which the brain processes sensory inputs, in particular, the way it draws the fundamental distinction between the self and the non-self and, by implication, the *self* body and an alien body.³⁵ It could be argued that there are sound evolutionary reasons that explain why this distinction must be hard-wired into our brain, so that we do not “discover” what our body is and what it is not, we simply feel it that way. Notice as well that whereas it is perfectly adaptive to recognize our body in an unmediated way, no clear adaptive function can be attributed to the phantom limb.

Could it not be the case that the same relationship of a body to a phantom limb, that no longer exists, applies in the case of a personal loss of someone with whom we have a close relationship? The idea that the self corresponds solely to the individual has been criticized by many anthropologists as being the product of modern bourgeois individualism.³⁶ In all probability, for the majority of humans (WEIRD populations included) the self is bound to include, to various degrees and perhaps in different ways, different individuals with whom a particular ego happens to be closely-related. Furthermore, specifically if amongst those other “selves” there are mostly close relatives, an evolutionary explanation in terms of kin selection could be provided for the existence of this extended self. Therefore, if the self contains more than one body, a clear analogy suggests itself between the loss of a limb and the loss of one of the other bodies included within *oneself*. A possible implication of this analogy is that if the loss of a limb brings about the phantom limb syndrome, a parallel kind of belief (or at least, a strong predisposition to believe) in spiritual selves, or spiritual beings *tout court*, could be generated by the death of a close relative.

As in the case of the phantom limb syndrome, there is no brain disorder or malfunction implicated in this latter kind of belief. Note as well that whereas an adaptive function could be attributed to the extended self, no clear adaptive value can be ascribed to the belief in spiritual beings. Of course, following the hypothesis I am putting forward here, there is also a remarkable disanalogy here between these two kinds of belief. Whereas the appearance of the phantom limb syndrome only needs the amputation of one limb, the formation of the belief in spiritual beings would require a more qualified experience, such as the death of several individuals included within one’s extended self. That would be the difference between WEIRD and non-WEIRD populations.

Any system of cultural representations that postulates some form of existence after death becomes especially attractive to human minds. The point I wish to make here is that the more frequent the experience

³² Bering, “The Folk Psychology”, 456.

³³ Melzack, “Phantom Limbs”.

³⁴ *Ibid.*, 4.

³⁵ The converse to the phantom limb is the so-called body identity integrity disorder or xenomelia, in which patients do not recognize part of their bodies as belonging to them. Interestingly, unlike the phantom limb, this is the result of a brain malfunction due to a lesion, stroke, etc.

³⁶ Morris, *Anthropology*.

of death of significant others is in a particular environment, the more successful that system of cultural representations is likely to be in that environment. And conversely, when that experience of death turns out to be less frequent, beliefs in afterlife, in disembodied beings and in the supernatural in general terms become less prominent.³⁷

Still, some might argue that perhaps the general experience of death in pre-industrial societies might not be as relevant as I claim, since a short life expectancy could be the result of infant mortality rather than adult mortality, hence, people might not suffer as much from the death of significant others if these others are just little children. Now, the extent to which the death of little children cannot be as emotionally devastating as the death of adult individuals³⁸ is unclear, given the fact of the universality of parental bonding and attachment. Furthermore, there is mounting evidence that the experience of death was particularly noteworthy in pre-industrial Europe,³⁹ even as late as Victorian and Edwardian England and, interestingly, among mostly agnostic intellectuals. This is the conclusion that can be drawn from John Gray's excellent study of psychic research and spiritualism in late nineteenth and early twentieth century Britain.⁴⁰ It seems that among many scientifically-minded scholars of that time traditional religion could no longer provide an appropriate explanation for the mystery of death, and yet the tragedy of significant others' death was as devastating to them as it probably was to the *hoi polloi*, less liable to uphold a materialistic anti-religious worldview.

With this I am not trying to reclaim a sort of neo-functionalist approach to religion, wherein beliefs in the supernatural become a buffer against the death anxiety produced not by the inexorable death of the self but by the no less inexorable death of significant others. As Spencer himself emphasized, religious beliefs and beliefs in afterlife in particular are normally far from comforting.⁴¹ So, in a similar manner to what we saw in the case of the phantom limb, it is unclear what function, social or otherwise, those beliefs might fulfill. This is important as far as the explanation of religious decline in WEIRD populations is concerned. I am not saying that people become less religious simply because they do not find religion "useful" in any way, nor am I saying that cultural groups with no religion are outreproducing the more religious ones (a very controversial statement, to say the least). I am proposing a causal hypothesis, not a functional one: what has changed among certain populations are the environmental factors, together with a myriad of innate predispositions, that caused proliferation of religious beliefs and practices in all human societies.

6 Conclusion

The main point of this paper has been to put forward a hypothesis on the decline of religiosity among WEIRD populations that there is a causal relationship between two variables that appear to be significantly correlated. On the one hand, there is the decline of religious belief and practice that has been observed among those populations during the twentieth century, and especially since the second half of that century. On the other, there is the remarkable growth of that same population's life span during that period. The factor that I am proposing as an explanation for that correlation is the causal link between the experience of the death of significant others and belief in the supernatural, in such a way that the more that experience

³⁷ According to Norris and Inglehart's data from 64 nations, there is a negative correlation between life expectancy, on the one hand, and religious participation (-.535) and frequency of prayer (-.454), on the other, and a positive correlation between child mortality rate (under 5 years), on the one hand, and religious participation (.604) and frequency of prayer, on the other (.608) (Norris and Inglehart, *Sacred*, 62). Drawing on the data supplied by a Gallup World Poll from 2005 to 2009 (Diener, Tay and Myers, *The Religion Paradox*, 1285-1286) and by the *CIA World Factbook* for 149 nations I have found a negative correlation of -.604 between the positive answer given to the question "Is religion an important part of your daily life?" and life expectancy at birth. Of course, as I argue in the main text, these correlations are merely indicative and do not prove anything on their own merit.

³⁸ See Scheper-Hughes, *Death*, for the contrary view. Again, the distinction between death experience and death anxiety should be relevant here.

³⁹ Ariès, *Western Attitudes*.

⁴⁰ Gray, *The Immortalization*.

⁴¹ Lanman, *The Importance*.

happens to be relevant in a population's day-to-day life the more that population will be prone to entertain beliefs in the supernatural and, conversely, the less prominent that experience happens to be, the less inclined will be that population to uphold those beliefs. The converse proposal is precisely what is evidenced in WEIRD populations during the period in which the correlation can be observed.

What this paper suggests is merely a hypothesis. I do not claim to have proven the existence of that causal relationship. As the old adage says: correlation does not imply causation. Many other factors that appear to be equally correlated with a growing life expectancy, such as general social and economic development and the sort of existential security and subjective well-being that it normally brings about, might also be at the root of the decline of religiosity.⁴² Let me summarize very briefly the main advantages of my proposal in comparison with other well-known theories of secularization. First, it is not based on the controversial idea that some populations have become more rational or scientifically-minded and hence they are capable of overcoming the intellectual errors of previous generations; neither can religion be considered as plain mistake originated in the ignorance of the laws of nature, nor are WEIRD populations as a whole particularly keen on scientific knowledge as such.⁴³ Secondly, it does not postulate any functional explanation for the existence of religious beliefs in general. What we could define as the “existential insecurity hypothesis,” according to which people adhere to a religious worldview as a sort of psychological buffer against life uncertainties is based on the, to my mind, dubious assumption that anxieties raised by an indeterminate future make people automatically seek solace in some sort of supernatural protection. That could very well be the case, but it is very far from obvious why it should be so, unless - and this is the important point - we provide a clear account of how those beliefs in the supernatural are actually generated, such as the experience of death of significant others, as I have been trying to do throughout this paper. Though it is true, on the other hand, that some religious beliefs may have fulfilled important functions that are now met by some other institution in the societies where WEIRD populations originate, this factor cannot be extended to the whole gamut of beliefs that we normally define as religious and that are equally on the wane in those societies.

Whatever the case, my proposed explanation does not necessarily contradict current secularization theories, but it merely adds a new piece to the puzzle, or it can even be said to be complementary to some of them, such as the existential insecurity hypothesis, in the terms I have specified above. Further research is undoubtedly needed to strengthen and eventually validate this hypothesis. Individual-level correlations between religiosity and experience of significant others' death would certainly lend invaluable support to the ideas developed in this paper. Furthermore, we need to know more about the relationship between beliefs in the supernatural and the bonds between the dead and the living. Ancestor cults are quite widespread and have been very prominent throughout history in the majority of human societies.⁴⁴ But it is by no means a proven fact that all religions treat the dead in the same way or consider the relationships between the living and the dead as equally meaningful. And we need to know more about the residual religiosity of WEIRD populations, which, it so happens, is more prominent among the older generations than among the younger ones.⁴⁵ It is unclear how this fact (which, interestingly, can only be observed

⁴² Diener, Tay and Myers, *The Religion Paradox*; Norris and Inglehart, *Sacred*.

⁴³ Societies with high confidence in science and technology are also societies with strong religious beliefs (Egypt, Nigeria, Turkey, Iran). By contrast, societies skeptical with the development of science and technology like the Netherlands, Norway and Denmark are also less religious (Norris and Inglehart, *Sacred*, 67-68). The truth of the matter is that the majority of people living in Western societies (especially the least educated, but not only those) find scientific knowledge totally alien in their ordinary lives, no matter how technologically sophisticated those lives happen to be. It is a flagrant contradiction, it seems to me, of the so-called “knowledge societies” that the more scientific knowledge is needed for the production of highly sophisticated technological gadgets of daily use (such as computers, tablets, smart-phones, etc.), the less scientific knowledge is actually needed for their manipulation (a small child can handle a tablet). See McCauley, *Why Religion*, for a cogent defense of the “unnaturalness” of science in contradistinction to the “naturalness” of religion (cf. Salazar, “Science, Religion.”).

⁴⁴ A mere superficial survey of traditional belief in Austronesian societies, for instance, which can be taken, with all due qualifications, as representative of what has been the case in the much of the preindustrial world, shows that beliefs in ancestral spirits are present in all of them except one, and they constitute the principal or a major focus of supernatural practice in 80 societies out of 116. See Watts et al., *Pulotu*.

⁴⁵ Bengtson, Putney, Siverstein and Harris, “Does Religiousness”; Voas and Doebler, “Secularization”.

among those populations) should be accounted for. It could be the effect of transmitted culture, as it has normally been explained thus: the elders were socialized in a less secularized cultural environment and hence they received a more religious education. However, it could also be the evoked culture, no so much because the elders are more afraid of dying, as perhaps Terror Management theorists would be inclined to argue, but rather because they have more significant others who have passed away and with whom they still feel the need to establish some sort of relationship.⁴⁶

References

- Ariès, Philippe. *Western Attitudes Toward Death. From the Middle Ages to the Present*. Baltimore: Johns Hopkins University Press, 1974.
- Astuti, Rita. "Are We All Natural Dualists? A Cognitive Developmental Approach." *Journal of the Royal Anthropological Institute*, 7:3 (2001), 429-447.
- Banerjee, Konika and Paul Bloom. "Would Tarzan Believe in God? Conditions for the Emergence of Religious Belief." *Trends in Cognitive Sciences*, 17 (2013), 7-8.
- Bengtson, Ven L., Norella Putney, Merrill Silverstein and Susan C. Harris. "Does Religiousness Increase with Age? Age Changes and Generational Differences over 35 Years." *Journal for the Scientific Study of Religion*, 54 (2015), 363-379.
- Bering, Jesse M. "The Folk Psychology of Souls." *Behavioral and Brain Sciences*, 29 (2006), 453-498.
- Bloom, Paul. *Descartes' Baby*. New York: Basic Books, 2004.
- Blume, Michael. "The Reproductive Benefits of Religious Affiliation." In *The Biological Evolution of Religious Mind and Behavior*, edited by E. Voland and W. Schievenhövel, 117-127. New York: Springer, 2009.
- Boyer, Pascal. *Religion Explained. The Evolutionary Origins of Religious Thought*. New York: Basic Books, 2001.
- Bruce, Steve. *Secularization. In Defence of an Unfashionable Theory*. Oxford: Oxford
- CIA World Factbook*. <https://www.cia.gov/library/publications/the-worldfactbook/fields/2102.html#138> (accessed November 2, 2017).
- Dennett, Daniel. *The Intentional Stance*. Cambridge, MA: MIT Press, 1987.
- Diener, Ed, Louis Tay and David G. Myers. "The Religion Paradox: If Religion Makes People Happy, Why Are So Many Dropping Out?" *Journal of Personality and Social Psychology*, 101: 6 (2011), 1278-1290.
- Ekblad, Leif and Lluís Oviedo. "Religious Cognition Among Subjects With Autism Spectrum Disorder (ASD): Defective or Different?" *Clinical Neuropsychiatry*, 14 (2017), 287-296.
- Eurostat. *Statistics Explained*. http://ec.europa.eu/eurostat/statistics-explained/index.php/Being_young_in_Europe_today_-_health (accessed November 2, 2017).
- Gopal, Kusum. "A Woman Exists Solely to Give Birth." *An Ethnographic Study. Reduction of Maternal Mortality and Neonatal Deaths in the Dodoma Region, Tanzania*. Unpublished UNESCO report.
- Grant, J. Tobin. "Measuring the Aggregate Religiosity Index in the United States, 1952-2005." *Sociological Spectrum*, 28 (2008), 460-476.
- Grant, J. Tobin. *The Great Decline: 60 years of religion in one graph*. <http://religionnews.com/2014/01/27/great-decline-religion-united-states-one-graph/> (accessed November 2, 2017).
- Gray, John. *The Immortalization Commission. Science and the Strange Quest to Cheat Death*. New York: Farrar, Straus and Giroux, 2011.
- Henrich, Joseph, Steven J. Heine and Ara Norenzayan. "The Weirdest People in the World." *Behavioral and Brain Sciences*, 33 (2010), 61-135.
- Jong, Jonathan. "On Faith and the Fear of Fatality: A Review of Recent Research on Deities and Death." *Journal for the Cognitive Science of Religion*, 1 (2013), 193-214.
- Jong, Jonathan, Jamin Halberstadt and Matthias Bluemke. "Foxhole Atheism, Revisited: The Effects of Mortality Salience on Explicit and Implicit Religious Belief." *Journal of Experimental Social Psychology*, 48 (2012), 983-989.
- Jong, Jonathan and Jamin Halberstadt. "What Is the Causal Relationship between Death Anxiety and Religious Belief?" *Religion, Brain and Behavior*. Published on line, (2017) DOI:10.1080/2153599X.2016.1249916.
- Kovalinka, Ivana, Dimitris Xygalatas, Joseph Bulbulia, Uffe Schødt, Else-Marie Jelindø, Sebastian Wallot, Guy Van Orden, and Andreas Ropstorff. "Synchronized Arousal Between Performers and Related Spectators in a Fire-Walking Ritual." *PNAS*, 108: 20 (2011), 8514-8519.

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- Lanman, Jonathan A. "The Importance of Religious Displays for Belief Acquisition and Secularization." *Journal of Contemporary Religion*, 27 (2013), 49-65.
- Marmot, Michael. *The Health Gap. The Challenge of an Unequal World*. London: Bloomsbury, 2015.
- McCauley, Robert. *Why Religion Is Natural and Science Is Not*. Oxford: Oxford University Press, 2011.
- Melzack, Ronald. "Phantom Limbs, the Self and the Brain (The D.O. Hebb Memorial Lecture)." *Canadian Psychology/Psychologie Canadienne*, 30:1 (1989), 1-16.
- Middleton, John. "Lugbara Death." In *Death and the Regeneration of Life*, edited by M. Bloch and J. Parry, 134-154. Cambridge: Cambridge University Press, 1982.
- Morris, Brian. *Anthropology of the Self. The Individual in Cultural Perspective*. London: Pluto Press, 1994.
- Norenzayan, Ara. *Big Gods. How Religion Transformed Cooperation and Conflict*. Princeton: Princeton University Press, 2013.
- Norenzayan, Ara, Will M. Gervais, Kali H. Trzesniewski. "Mentalizing Deficits Constrain Belief in a Personal God." *PLoS ONE*, 7:5 (2012) Article e36880.
- Norenzayan, Ara, Azim F. Shariff, Will M. Gervais, Aiyana K. Willard, Rita A. McNamara, Edward Slingerland and Joseph Henrich. "The Cultural Evolution of Prosocial Religions." *Behavioral and Brain Sciences*, 39 (2016) e1.
- Norris, Pippa and Ronald Inglehart. *Sacred and Secular. Religion and Politics Worldwide*. Cambridge: Cambridge University Press, 2011.
- Pinker, Steven. *The Better Angels of Our Nature*. London: Penguin Books, 2011.
- Richerson, Peter J. and Robert Boyd. *Not by Genes Alone. How Culture Transformed Human Evolution*. Chicago: University of Chicago Press, 2005.
- Salazar, Carles. "Anthropology and the Cognitive Science of Religion: A Critical Assessment." *Religion and Society*, 1 (2010), 44-56.
- Salazar, Carles. "Science, Religion and Forms of Life." In *Religion and Science as Forms of Life. Anthropological Insights into Reason and Unreason*, edited by C. Salazar and J. Bestard, 1-21. Oxford: Berghahn Press.
- Scheper-Hughes, Nancy. *Death without Weeping: The Violence of Everyday Life in Brazil*. Berkeley: University of California Press, 1992.
- Spencer, Herbert. *The Principles of Sociology*. New York: D. Appleton and Co., 1898.
- The World Bank. Data. <http://data.worldbank.org/indicator/SP.DYN.IMRT.IN> (accessed November 2, 2017).
- To Women's Health. Maternal Mortality. <http://www.2womenshealth.com/Postpartum/Maternal-Mortality.htm> (accessed November 2, 2017).
- Tooby, John and Leda Cosmides. "The Psychological Foundations of Culture." In *The Adapted Mind. Evolutionary Psychology and the Generation of Culture*, edited by J. Barkow, L. Cosmides and J. Tooby, 19-136. New York: Oxford University Press, 1992.
- 12 Hopeful Maps & Graphs of Religion in Africa. <https://churchpop.com/2014/11/20/12-maps-graphs-of-religion-in-africa/> (accessed November 2, 2017).
- United Nations. *World Population Prospects 2017*. <https://esa.un.org/unpd/wpp/Graphs/DemographicProfiles/> (accessed November 2, 2017).
- Voas, David and Stefanie Doebler. "Secularization in Europe: Religious Change Between and Within Birth Cohorts." *Religion and Society in Central and Eastern Europe*, 4 (2011), 39-62.
- War Deaths 1945-2000. http://www.worldmapper.org/posters/worldmapper_map287_ver5.pdf (accessed November 2, 2017).
- Warner, Rob. *Secularization and its Discontents*. New York: Continuum, 2010.
- Watts, Joseph, Oliver Sheehan, Simon J. Greenhill, Stephanie Gomes-Ng, Quentin Atkinson, Joseph Bulbulia and Russell Gray. "Pulotu: Database of Austronesian Supernatural Beliefs and Practices." *PLoS ONE*, 10:9 (2015).
- Wilson, David S. *Darwin's Cathedral. Evolution, Religion, and the Nature of Society*. Chicago: University of Chicago Press, 2002.
- World Health Organization (WHO) Trends in Maternal Mortality 1990 to 2015. https://embryology.med.unsw.edu.au/embryology/index.php/File:WHO_map_maternal_mortality_ratio_2015.jpg (accessed November 2, 2017).