The Pleasure of Believing*

Toward a naturalistic explanation of religious conversions

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ABSTRACT

From a cognitive point of view, the adhesion to religious beliefs, especially those involving adult subjects, are quite mysterious. Religious representations entail paradoxical claims that should imply skepticism or cautious doubts in any rational mind. Nevertheless, it is not rare that they prompt an act of total commitment from the converts. The aim of this paper is to propose a naturalist explanation of the conversion phenomenon. The argument relies on the postulated existence of an emotional signal selected by evolution to motivate the child to look for the underlying structure of the world by providing a strong positive feeling when a solution is found. By the use of different examples of historical conversions, the author shows how this emotional mechanism can be triggered in the presence of religious representations, causing in the subjects the feeling that they have discovered a good solution to problems they were confronted with.

Introduction

On the road from Jerusalem to Damascus, some two thousands years ago, a wealthy Jew strongly involved in the fight against a developing religion called Christianity, had an astonishing vision. Saul, who changed then his name to Paul, was thrown to the ground as a blinding light surrounded him and the son of God said to him: "Saul, Saul, why do you persecute me?"[1]

Despite its extraordinary nature, this event definitely shapes the Western conception of religious conversions. A conversion is seen as a sudden

[1]Acts 9: 1-9.

psychological upheaval that leads the subject to embrace a system of be-
liefs he didn't adhere to before.[2] This view of conversion is nevertheless
potentially misleading. After all, many people have experienced a religious
conversion that is far less spectacular but just as profound or sincere.[3]
Furthermore, from the naturalistic point of view we will stick to, mystical
conversions are in a way less "mysterious" than more common ones: in
a world where seeing is largely believing, the *perception* of a supernatural
entity is indeed a good argument in favor of its existence.[4] On the other
hand, it is hard to explain the apparently simpler conversions in which the
converts adhere to a representational system in spite of its inability to pro-
vide concrete piece of evidence or strict logical proof. In numerous cases,
disciples even accept propositions that are clearly counter intuitive, not to
say apparently absurd. How is it possible for their judgmental capacities to
nevertheless "welcome" these beliefs?

These questions become still more disturbing when looked from a
naturalist perspective, i.e. an approach whose explanations try to be
compatible with the notions and principles admitted by science. In the
conversion case, one can wonder how the cognitive system, finely tuned
by years and years of natural selection, can let go to more than dubious
propositions. Why is the mental apparatus, capable of so much rational
wonders, so often taken over by ideas that seem too far remote from
reality?

In this paper, we would like to propose an account of the way
conversions take place in our sophisticated mental apparatus.[5] In our

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[2]Conversion is therefore not confined to the religious sphere, even if this is the topic
of this paper. Scientists can experience a conversion when a new idea completely modifies
the way they use to apprehend an issue. This had been well described by Thomas Kuhn,
who has drawn analogies between the revolution of scientific paradigms and the religious
conversions (Kuhn 1962).

[3]James (1902) insightful remarks played an important role in the current conception of
conversion as involving extraordinary manifestations.

[4]This line of argument is documented and defended by the instigators of the so-called
"neurotheology." See, for example, Newberg, D'Aquili & Rause 2001, who describe how
an unusual activity of a certain area of the brain (orientation association area) leads to
mystical experiences.

[5]Our approach intends to be in line with the work of researchers like Barrett (Barrett &
Keil 1996, Barrett 2000), Boyer (1994, 2001), Lawson (Lawson & McCauley 1990, Lawson
2001), Mythen 1996, and Sperber (1985, 1996).

opinion, conversions are possible partly because they fulfill some cognitive functions that had evolved for other purposes.[6] Our strategy is to use an hypothesis developed, in a different context, by the psychologist Alison Gopnik (Gopnik 1998). Impressed by the explanation's thirst that seems to underlie numerous behaviors of very young children, she postulates the existence of an emotional phenomenon to explain this cognitive drive: the "explanation orgasm." Once this hypothesis is presented, we will propose to use it to explain what could happen in the cases of conversion. We will see that this explanation is relevant to certain kinds of conversion, but not to all. To explain these other cases, we will then suggest a way to *extend the boundaries of the cognitive constraints* somewhat in order to make the "orgasmic" hypothesis more heuristic.

Before expounding Gopnik hypothesis, we first have to specify why conversion's phenomena are astonishing from an evolutionary perspective. In the first part of this paper, we will therefore develop another recent hypothesis that postulates the existence of a "cognitive filter."

Conversion and the cognitive filter hypothesis

In March 1997, in a suburb of San Diego, thirty-nine men and women left their carefully packed suitcase near their bed and swallowed a mortal cocktail. They all belonged to a cult called "Gate and Heaven" and were determined to shed their human "containers" in order to travel to a spaceship hidden behind the Hale-Bopp comet.

If these kinds of news are still good candidates for the front pages of our newspapers, it is because they rarely missed their goal: captivate the attention of potential readers. "How could they believe such nonsense?" is the kind of question that bursts out, once this information is known. This astonishment reveals a common and spontaneous expectation concerning the way beliefs are normally processed. One should be cautious with communicated propositions: a certain *screening* has to be done.

This common sense expectation is actually understandable when set in the context of natural history. The general context of this selection is

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[6]We will focus here only on the kind of emotion that is connected to the cognitive dimension of the conversion phenomenon. This is not to say that other emotional factors don't play a crucial role, as we have shown elsewhere (Clement 2001).

the exchange of information. Globally, the advantages given by commu-
nication are tremendous: individuals can benefit from the knowledge and
experiences accumulated by others (Quine & Ullian 1978). Such informa-
tion can then be activated when a decision has to be made, increasing
the chances of appropriate behavior. But communication also entails some
dangers. In numerous situations, it is more advantageous for the com-
municator *not* to tell the truth: by giving false information to others, a
smart liar can induce a behavior that will be beneficial for himself, not
for his interlocutors. Although the predominance of communication was
advantageous from an evolutionary perspective (Axelrod 1984), it offers
also multiple possibilities of abuse and misuse that required adjusted de-
fense mechanisms. The long story of cooperation vs. competition, trust vs.
suspicion, can thus be described as an evaluation-persuasion "arms race"
(Krebs & Dawkins 1984). As the potential threat of manipulation is an
enduring problem for the human species, it is reasonable to admit that
some specific systems have been "designed" by natural selection (Tooby &
Cosmides 1990). Actually, it has been shown that specialized mechanisms
are far more efficient to solve problems that regularly occurred during the
evolutionary past that a single general solution (Cosmides & Tooby 1994).
Basically, the cognitive system had to evolve something like a "cognitive
filter" (Sperber 2000).

   To be economic and effective, the cognitive function has recruited
different subsystems. For example, one of the first things that the addressee
can check is the good intention of the communicator. It is likely that
we have at our disposal subtle mechanisms that "read" the expression of
our partners, in search of eventual discrepancies between their expressions
and their speeches.[7] In the same line of argument, it is important to be
able to identify the individuals who have cheated in the past (Cosmides
& Tooby 1989): a face detector and a memory module are therefore
implied in this first checking procedure. It would be ingenuous to imagine
that communicators would have ignored this new fact and not initiate
the next step in the arms race. After all, once these "honesty detectors"
is implemented, the likelihood that some "honesty displays" evolved to
deceive the addressees is pretty high. For the addresses to "stay into the

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[7]Actually, the efficiency of these detection's mechanisms has been put into perspective
by Paul Ekman (Ekman 1985).

race," it then became important to develop some mechanisms that will submit the content of the communicated information itself to some basic screening procedures.[8] A relatively easy way to proceed consists in some coherence checking. For example, the communicated propositions can be rapidly checked and compared to contents already accepted in order to detect contradictions. The potential deceiver is nevertheless able to pursue the "war escalation." This time, rhetorical means are within his reach. He can try to display signs of coherence by using logical terms such as "if," "and," "or" and "unless," and words indicating inferential relationships such as "therefore," "since," "but," and "nevertheless" (Sperber 2002). To avoid swallowing this superficial logic, the addressee has thus to conduct a more and more epistemic evaluation of the message.

Evolutionary pressures related to human communication allow us to assume that something like a cognitive filter has evolved. Admittedly, this checking device will not systematically express its entire analysis potential. A pressing situation could require a quick answer. Or the energetic expenditure could be excessive regarding to the potential value of the communicated information. In addition, the consequences of the representations at stake could have disastrous consequences for the addressee's well-being; he would therefore not be strongly motivated to examine their possible relevance.[9] In any cases, the existence of such a filtering device makes it very surprising that, in many cases of conversion, very strange representation systems are admitted by the disciples. A new hypothesis proposed by Alison Gopnik could explain why it is nevertheless possible.

The explanation's orgasm

The nature of religious belief is often quite astonishing: a piece of bread is the Son of God's body, certain women fly during the night on banana trees' leaves, humans are "plants" left on Earth by extraterrestrials in

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[8]It may be useful to specify that deceiver and deceived designate two positions that can be inverted. In addition, the evolutionary process roughly described here spread out over thousands of years.

[9]We have proposed elsewhere an explanation of credulity having recourse to the combine effect of the cognitive and emotional filters (or "evaluators") (Clement 2001).

order to perpetuate their species.[10] Out of context, these propositions don't seem to make any sense but the representational systems in which they are embedded has been judged acceptable by a great number of people. A phenomenon described by Gopnik could bring a new light on the mechanisms implied in these kinds of adhesion.

As a brilliant developmental psychologist, Alison Gopnik spent a lot of time observing young children. One of the things that surprised her, as well as many parents, is the considerable amount of energy invested by children in the exploration of their environment. An adorable 15 months old girl can for example play for a very long time the "drop the spoon" game (and become not so adorable after the fifth try!). Not to mention the "terrible-two" carefully experimenting the subtle way mental states and emotion lead the behavior of her caregivers... In a way, the tremendous expense of energy spent on getting to the Ming vase or the boiling iron looks very dysfunctional. But, as Gopnik put it, this is only a superficial feeling. All these active explorations are part of a more general cognitive imperative: to go beyond perceptual representation in order to understand the causal nature of the world (Gopnik & Wellman 1994). Of course, there is a payoff for this activity in the long run. Getting a good picture of the causal nature of the world allows for a wide range of accurate predictions that can favor relevant decisions and reach various goals. But a fifteen month-old or terrible two is not aware of these long-term advantages. So why are children ready for these explanatory efforts? What motivates them to use their energy in this way?

A careful observation is once again full of lessons. When children are in the process of finding an explanation of a phenomenon, they show a great deal of puzzlement or even distress. In contrast, when they understand what is going on, or when they are confronted to a problem they can master, they often display satisfaction and even joy. Understanding goes then hand in hand with a phenomenal experience that is highly positive. This explains the somewhat provocative wording by Gopnik: "explanation is to cognition as orgasm to reproduction" (Gopnik 1999: 102). Still from an evolutionary angle, the "aha" experience that follows the puzzling "hmm" has been selected to (1) indicate to the organism that an explanation

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[10] For a "catalogue" of various religious beliefs, and for an interesting cognitive explanation of their persistence, see Boyer 2001.

has been reached, (2) encourage the explanatory effort by providing a rewarding emotion. This kind of "cognitive emotion" could therefore explain the epistemic drive that can be observed in children (and scientific) behavior.[11] From an evolutionary point of view, the good insight feeling that goes with explanations plays a similar function as orgasms. They were selected to favor adaptive behaviors. As Gopnik put it: "we experience orgasms and explanations to ensure that we make babies and theories" (Gopnik 1999: 102).

This "cognitive emotion" hypothesis, which is plausible and will be taken for granted for the purpose of our argument, may have important consequences for the conversion's problematic. Let's remind ourselves of the core idea: when an explanation is reached, a positive "aha" feeling is triggered off. This phenomenological effect has been selected to encourage the quest of the underlying causal structure of the world and the formation of theories.[12] But such a mechanism does not insure the cognitive system from any risk of malfunction, far from it. The positive reaction seems to be automatically sparked off by a certain pattern of inputs (that still have to be precisely identified), without a real control of the will. Therefore, it is possible to imagine situations where doubtful arguments present some of the superficial characteristics of an explanation, triggering thereby the phenomenal experience. Confronted with the feeling usually related to the grasp of an explanation, the subject will likely be inclined to consider that he is faced with an explanation. Without a strong motivation for being suspicious, the causal structure exhibited by this explanation could therefore be considered as entirely acceptable.

The preceding description is particularly relevant for conversion's cases. To show that such an explanation is susceptible to give an account

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[11]To simplify and make the "explanation's orgasm" a little bit less polemical, we put aside another interesting assumption made by Gopnik. Actually, she thinks that we all possess a special representational system, the "theory formation system." This system takes inputs from the perceptual system and transforms them into representations of the underlying causal structure of the world. From this point of view, representations involved in the "aha" experience are formulated in terms of abstract theoretical entities and laws. For a defense of this position, see for example Gopnik & Meltzoff 1996.

[12]Ronald de Sousa claimed something similar when he said that we are true propositions' collectors, motivated by an epistemic desire (De Sousa 1971).

of some of the convert's psychological processes, we will take now the example of a famous historical conversion: Saint Augustine.

The truth seekers

The conversion of Saint Paul, which opens our study, is not a very representative example of what is experienced by the majority of converts. The road to conversion is generally less spectacular and more progressive. Very often, the turning point is the result of a more or less extensive quest by the subject, who can therefore be characterized as a "truth seeker." When the subjects are not considered as passive receptacle of the divine message but as active "meaning-seeking entities" (Richardson 1989), the explanation's orgasm hypothesis turns out to be very relevant. The history of Augustine, one of the most famous cases of conversion in Western History, will serve to exemplify how such a mystical experience can be highlighted by a cognitive analysis.

The complexity and importance of Augustine for medieval and modern European philosophy makes it impossible to summarize his voluminous work. Here, we will keep to a brief overview of his conversion, as he described it in *The Confessions*. In this classic book, he first describes the sensuality of his youth and then the tortuous path to Christian faith. Somewhat disturbed by rhetoric training, in which he excelled, he found it difficult to direct his life in a world where all seemed to be relative. His first encounter with philosophy persuaded him that the pursuit of wisdom is a noble cause (Augustine 397: book III, 40). Consequently, he devoted his life to the discovery of the perpetual principles that govern the world order. What he wanted was a sure knowledge or the principle of all principles: God (Starnes 1990).

In the first step of his quest, Augustine rejected Christianity, judging the Scriptures far too naïve and full of inconsistencies. He was then drawn to astrology, which seemed to establish the order of causes in the course of otherwise absurd and random events. But he soon realized that this "art" has nothing to do with science (Augustine 397: book IV, 56). His commitment to Manichaeism was much more significant. In fact this is not surprising for a young man in search for meaning. Manichean metaphysics explained both the beauty of cosmos and the chaos of worldly reality by an eternal conflict between two conflicting principles: Light and Dark,

good and evil (Chadwick 1986). In addition, Manichees were very good at highlighting the contradictions of Catholicism. Augustine was particularly fascinated by the problem of evil: if God is loving and Almighty, where did the evil come from? For Mani, this question was not a problem because evil, as good, exists from all eternity as a cosmic force.

But the inquiring mind of Augustine began to find more and more weaknesses and contradictions in the Manichee system, in particular in its theory of nature. At that time, he met a brilliant Christian intellectual, Ambrose the bishop, who was deeply influenced by the Neoplatonic philosophy. Neoplatonism "set his mind on fire" (Chadwick 1986). It enabled him to conceive a hierarchical pyramid of essences, the top of it being occupied by God, one and absolute. In this progressive structure, each level is the cause of the next immediate level. There is a gradual loss of value at each level for every effect is slightly inferior to its cause, but a "conversion" to the ultimate source of being is still possible. By a deep inner scrutiny, it is therefore possible to feel the presence of this unchanging and everlasting principle at the source of all reality, as Augustine experienced it personally (Augustine 397: book VII, 133-134). Neoplatonism was also able to give an account of the problem of evil, which is "no more than a defect of being-and-goodness, inherent in the mere fact of an inferior level" (Chadwick 1986: 20).

In Augustine's judgment, philosophy could do no more than that: rationally conceive an immaterial, eternal and intelligible God. It could not give the power to live in a relationship with the now-discovered God. Interestingly, the peak of his thinking brought him back to the Catholic doctrine he left in the first place. The last step of his conversion was crossed thanks to Saint Paul (him again!). This latter shed lights on the Bible by using a strongly Platonizing language that seems to rule out the potential contradictions undermining it (2 *Corinthians* 3-4). When he discovered that his philosophical convictions could go hand in hand with the revealed faith, he "learned to rejoice with trembling" (Augustine 397: book VII, 141).

If we are tempted to say that Augustine had at that point already converted to Christianity, this was actually not his opinion. For him, adopting really and truly this religion had to bring about a complete change in his life, and in particular the adoption of a contemplating life deprived of all sexual activity that he highly appreciated. This inward conflict, which

can be considered as a cognitive dissonance, was resolved later, during an episode described in the book VIII of *The Confessions*.[13] As he was struggling with the practical consequences of his new faith, he heard a child voice telling him to "pick up and read" (*tolle, lege*). He went to pick up the Bible "and in silence read that section on which my eyes first fell: Not in rioting and drunkenness, not in chambering and wantonness, not in strife and envying; but put ye on the Lord Jesus Christ, and make not provision for flesh, in concupiscence" (Augustine 397: book VIII, 167). At the end of July 386 he made the decision to abandon marriage and secular ambition . . . and became one of the most famous Christians of all time.

This classic example is interesting for our reflection in many respects. To begin with, it shows that conversion cannot be reduced to a sudden flash; it is rather the culminating point of months and months of gestation. At the same time, this very conversion leaves room for the revelation's phenomenal peak. The milestones punctuating the Augustinian experience can be seen as so many positive experiences that indicated the validity of his discoveries. "These things did wonderfully sink into my bowels, when I read that least of Thy Apostles, and had meditated upon Thy works, and trembled exceedingly" (Augustine 397: book VII, 143). In other words, each time his reflection encountered an explanation *throwing light on his personal issues,* he had a feeling of satisfaction and fulfillment that were pleading for its validity and admissibility.

For Augustine, as for other figures deeply involved in the quest for an absolute truth,[14] the mental mechanism selected to favor the explanatory drive likely played an important role in the conversion's process. For active truth-seekers like Augustine, the "explanation's orgasm" hypothesis seems thus particularly relevant to explain the conversion process. But is it a process that can be generalized to all cases of conversion?

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[13] The concept of "dissonance," as well as its effect of the belief formation process, what introduced by Festinger 1956, 1957.

[14] Another interesting example is the conversion of Leo Tolstoi, described in *A Confession*. Tosltoi went through a deep existential crisis. This latter was resolved when he turned his attention to the people of the working class. Admittedly, their religion was simple, but it has a wonderful power: these beliefs gave meaning to their harsh live. Therefore, Tolstoi took very seriously the content of their faith, finding some comfort in it (Tolstoi 1884).

The puzzling case of passive converts

The emotional convert

The "cognitive emotion" hypothesis is quite effective in explaining "intellectual" conversion, where the subject tries *actively* to work out a cosmic order where his life takes on its full meaning. Actually, this kind of quest is not so different from the scientific approach, the scope of the causal structures being extended to the global meaning and origin of life. It is therefore not so surprising to find the same mechanisms at play.

However, when the conversion phenomenon is taken on as a whole, the epistemic description cannot be the end of the story. The issue with the hypothesis previously defended is that it concerns only a minority of conversion cases. Apart from a kind of intellectual or epistemic drive, there are many other motives for a conversion, in particular strong affective motives.[15] In an empirical study giving a large part to detailed adolescents' interviews, Chana Ulmann was surprised to discover that the motives were rarely epistemic. Most cases of religious conversions occur against a background of emotional turmoil and instability and the converts are far more looking for peace and stability than truth (Ulmann 1989).

> At its cores is the hope of psychological salvation promised by the protection of an omnipotent figure and loving peers. For most of the religious converts I interviewed, the actual conversion experience focused on newly found protection, attention, and acceptance by another or by a group of others, which rendered superfluous and unnecessary an examination of the beliefs or of the actions involved. (Ulmann 1989: 20-21)

If the majority of converts are driven by a desire to simply feel better, the epistemic model proposed above cannot constitute a theory of the conversion's process in itself; its validity would be limited to the cases where a rational quest for the ultimate causes are carried out. However, we would be confronted with a striking difficulty: how is it possible for propositions that are neither empirical nor logic to override the cognitive filter? Do

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[15]Loftland and Skonovd (1981) even categorize six different motives for a conversion: intellectual, mystical, experimental, affective, revivalist, and coercive. We think that these distinctions relate back to a fundamental distinction between epistemic and emotionally driven conversion processes.

we have to give up our explanatory ambition and turn to psychiatrists or neurophysiologists? We think there is no reason to abandon our paradigm. Saying that the majority of conversion's cases are out of scope of reason impoverishes the richness of this experience and prevent us from seeing conversions as possible consequences of *normal* mental mechanisms. To enrich our paradigm, we propose to describe the function of the cognitive emotion in a slightly different way. To illustrate our account, we will first briefly set out the example of a man who converted to – and survived – a cult, the Solar Temple, whose most members were eventually "led to suicide."

The emotional turmoil felt by Thierry Huguenin dated back to his youth, when his life's dreams and projects failed one after the other.[16] However, he was fully integrated in his society, with a very decent job, a wife and two children. Convinced that all his bad experiences should have a meaning, he got more and more into esotericism. One day, he was introduced to a person highly considered by some of Huguenin's friends: Joe di Mambro, who was about to set up the Solar Temple cult. Huguenin was immediately attracted by the self-assurance of this man. When the guru suggested that Huguenin could well be a reincarnation of a figure of the past paying in this life for his past sins. The future disciple was immediately seduced. Here are his owns words:

> At least, I am the pilot of my life; I have found my guide and I just have to follow him. I am not this afraid victim who runs in all directions under a shower of blows. (Huguenin 1995: 85-86)

Not only the guru showed sympathy to the new potential disciple, but he also proposed that Huguenin attend his "seminaries," where he could learn different techniques to discover whom he was the reincarnation of. The new candidate was then welcomed by a group of very supportive people and, since then, became immensely attached to that group. More and more isolated from his usual social world, he eventually immersed himself in the very disciplined life of the cult. Although he was mostly

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[16] Thierry Huguenin, who belonged to the Solar Temple for many years, survived the tragic end of the cult (in October 1994 fifty-three persons where founded dead in Switzerland and Canada). As one of the rare survivors, Huguenin told his story in a very vivid and honest way in *Le 54e*.

impervious to the numerous contradictions entailed in the representational system of the cult, a flash of critical thought, after years of quasi slavery, finally saved him from the tragic end of the other followers.

Thierry Huguenin story exemplifies, in a dramatic way, the process that is characteristic of the vast majority of conversions. The subject feels a sense of loneliness and has the feeling that his life is meaningless. In this state of more or less intense emotional turmoil, he meets a charismatic leader who takes an interest in him or/and a group of friendly people that warmly welcome him.[17] Suddenly integrated in a community oriented toward a promised fabulous destiny, the new disciple seems capable of believing in the most incredible doctrines. According to such a description of the conversion process, the cognitive model expounded above appears quite inappropriate. But we think that there is a way to update it. Our proposal consists in getting back to one of the model's requisite: the idea that all explanations are necessarily aiming for the truth.

Evolution and the Truth

The model we used to describe how "cognitive emotions" could influence conversion's processes is greatly influenced by the way science works. For Gopnik, children are "theory driven," trying to discover the underlying causal structures of the world. In this theoretical perspective, what is aimed at by this activity is the adequacy between the theory *in the mind*, and the causal structures *of the world*: in other words, the cognitive efforts strive for the truth. This is precisely what we are now going to discuss.

The idea that cognitive processes are aiming at truth has recently been the subject of an interesting debate. From an evolutionary point of view, there are good arguments in favor of the selection of truth as an objective for cognitive procedures. If we consider with Dennett that the mind is essentially an "expectation-generator," the predictions will be adaptive only if they are close enough to the future states of affairs (Dennett 1996). For example, a cormorant that systematically predicts a wrong position of fishes before it dives will not get many catches... This adaptation requisite seems to be at least as important

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[17] The importance of the paternal figure and the preeminence of the loving pairs in the conversion processes are described by Ulman 1989.

for procedures involving cognitive anticipators, which essentially process information already stored to produce new representations. For example, someone seeing an emergency number on a police car will probably dial it if a fire breaks out one day, *inferring* that this number is a good means of reaching the fire department. In that circumstance, this inference would produce the best-expected action and maximize the expected utility: in others words, our witness would be described as *rational* (Nozick 1993). Of course, this action will be successful only if the emergency number is also linked to the fire department in the actual world (and not only in the subject's mental world). Therefore, it seems that the most effective inferential results depend on the correspondence between what is in the mind and the represented state of affair in the world. And this is nothing else than a basic definition of "truth."

After this first approximation, it seems that aiming at the truth is an effective evolutionary "strategy." However, this conception is questionable. Firstly, it is related to the basic premise that evolution goes hand in hand with *optimization*, i.e. that evolution leads to "perfect" or "ideal" systems. This is nowadays denied by biologists showing that selection is not synonymous with perfection. One of the examples is a phenomenon called "pleiotropia": an advantage (like being white in the artic surrounding) is inseparable from a disadvantage (a bad eyesight due to being albino) (Stich 1990). Secondly, a distinction has to be made between two kinds of fitness, external (the system has to deal successfully with ecological constraints) and internal (this task has to be completed in a economical way). For Stich, in a competition between the inferential system G1 and G2, even if G1 leads more often to true beliefs than G2, G2 can be selected because its internal fitness is better; G2 can be notably less costly in "hardware," time or energy (Stich 1990: 61). In summary, an inferential strategy that would lead to the more reliable results can be so costly that a more economical solution is more likely to be selected (Cherniak 1986).

Given these arguments, we propose to redefine the purpose of the cognitive system in more pragmatic way. From an evolutionary point of view, its aim is probably less to produce truth beliefs than to take part in the making of a viable *solution*. For the organism's fitness, pragmatic consequences are more important that the satisfaction of obtaining true propositions. By that, we do not intend to rule out the advantage of truth

oriented procedures. Actually, having true beliefs generally promote the emergence of an adapted solution. Thus, a good theory structuring the causal structure of a phenomenon could ensure good predictions and, as a result, adapted behaviors. However, given the evolutionary constraints developed above, it is judicious to suppose that the "aha-feeling" (cognitive emotion) had been selected to be triggered when faced with a reliable solution. In this context, a good theory must be considered as one solution among others.

The great value of good solutions

The high cost of intensive cognitive process make not very likely the selection of a specific mechanism designed to systematically foster an intensive epistemic inquiry. This does not deny the importance of truth in all kinds of context. Science is the most obvious example: scientists are trained to discover the truth and rewarded when they find a theory that constitutes a more accurate approximation of the world's causal structures. Science can therefore be considered to be a cultural activity where "the fitness of theories" is maximized, at almost any cognitive price. In such an environment, the "logic of discovery" is probably motivated, among other rewards such as glory or power, by the "aha experience" that completes the process of inquiry.

In the case of conversions, however, we have seen that this logic of discovery concerns only a minority of sages. In most cases, people convert to an established religion because its discourse *makes sense* to them. Actually, the situation is not completely unfamiliar to what happens in science. Very few are the geniuses that completely change the way we look at the world. When these revolutions happen, the question for the majority of scientists is to *convert* to the new paradigm. These "scientific conversions" are even full of lessons. Why do scientists adopt a new theory when this latter disrupts their former conceptions? Some interesting comments delivered by Thomas Kuhn can be useful here. People adopt a new paradigm when (1) it gives an answer to problems or enigma that were not resolved in the old paradigm, (2) the predictions it generates are more accurate, (3) it gives access to phenomena unknown until then, (4) the way it is formulated is more esthetic, and (5) it encompasses the promise of new results (Kuhn 1962). The connection with religious conversion is striking.

The future converts are confronted to existential problems that their former vision of life can no longer handle. They are suddenly faced with a system of representation that seems to respond to long lasting questioning never satisfactorily tackled before. Moreover, this new system includes detailed instructions leading to a brighter future. In certain contexts, this very positive "this-makes-sense" feeling can lead subjects to consider such systems as solutions good enough to adopt them without really watching out for possible contradictions.

The question is then the following: is it possible to be more specific and highlight some characteristics of explanation systems as successful as religious systems? Such an ambitious objective exceeds the limits of this paper but some preliminary remarks can mark out future developments. First, without underestimating the importance of group reception and emotional support – and the different kinds of manipulation techniques, the attraction exerted on the disciples is also very often due to the system of religious representations itself. Even if this latter seems bizarre to an external observer, it is endowed with a systematic character that enables the adherents to make sense of events otherwise absurd.[18] When the disciples are asked to describe their conversion, their statements are thus very similar: the acceptation of the doctrine coincided with a blissful feeling. Suddenly, something clicked and everything fit together, in a feeling similar to the "cognitive emotion." As Thierry Huguenin put it: "Fragmented, chaotic, unsystematic, my life suddenly goes on an unique way (…)" (Huguenin 1995: 86). If everything is henceforth clear for the disciple, it is because he understands why he had endured so many painful experiences in his life. In other words, he had discovered the *cause* of his unhappiness. In most religions, this cause lies in the almighty will of a supernatural entity that has a plan for everyone on earth.

Another important element may be pointed out: not only religious explanations give a Cause for everything that happened in the past, but they also illuminate the future. Most religions supply their members with a "to-do list" that gives precise instructions about the way to conduct one's forthcoming life in order to obtain happiness. A similar phenomenon is also present in science. We have seen with Kuhn that a new paradigm

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[18]For an example of the internal "plausibility" of an *a priori* unbelievable system, see Clement & Bethele (in submission).

is all the more acceptable if it promises future developments, i.e. a way to conduct researches that can be successful. Very likely, this pragmatic element plays an important role in the (more or less explicit) selection of a good solution to a problem.

Finally, a word can be added about the representational format of these successful religious systems. The structural requirements of such systems are quite demanding. On one hand, they have to ensure a feeling of totality, comprehensiveness, and wholeness. On the other hand, they must be able to propose an explanation that gives an account of the past and present of the individual and, at the same time, proposes a program to run his future life. We think that the candidate for playing this role is the *narrative*. As Ricoeur put it, a good story has the property of turning life accidents into a coherent and understanding stream of events (Ricoeur 1990). The importance of narratives in the constitution of personal identity is nowadays accepted (Gazzaniga 1985; Dennett 1988; Bruner 1987). Even a quick glance at the history of religion shows that they are essentially narratives. Seen from this angle, even the important scientific theories can be considered to be good narratives, explaining the succession of – causal – events that conducted to a certain phenomena (e.g. Big Bang, Evolution, etc.).

A precise description of the nature of a "good story" has still to be established, but the power they encompass is closely related to their ability to trigger the everything-sticks-together feeling. And we have seen that this feeling is hardly distinguishable from what we have called the "cognitive emotion." Confronted by such a phenomenological experience, it is therefore not so surprising that the subject infers that the proposed story is potentially valid.

Conclusion

The main objective of this paper was to cast some light on a somewhat mysterious phenomenon: religious conversions. Our question could be expressed in the following terms: given the lack of proof and the non-intuitive character of religion doctrines, how is it possible that so many individuals accept such propositions in their "stock" of beliefs, ready sometimes to give their life for them?

In a first step, we briefly summarized the arguments pleading for the existence of something like a "cognitive filter." The purpose of this selected function is to screen the communicated information in order to avoid, as far as it is energetically possible, potential deceptions. Given the existence of such a filter, the phenomenon of conversion appears quite mysterious. To propose a naturalistic theory of how these adhesions are nevertheless possible, we took advantage of a hypothesis proposed by the developmental psychologist Alison Gopnik. According to her, a specific emotion had been selected to motivate the child to look for the underlying structure of the word. This emotion can be compared to an explanatory orgasm and corresponds to the "aha" experience that the subject feels when he understands a former unsolved problem.

Equipped with this model, we have shown that it could lead to an explanation of the most "intellectual" kinds of conversion, where a considerable cognitive energy is put into the understanding of the human destiny mystery. Augustine's conversion has been used as a paradigmatic case to highlight what could happen is these circumstances. However, we were then confronted by a problem: the majority of conversions do not seem to correspond to this idealized quest. Very often, conversions are driven by emotional factors and the logical coherence of the doctrine is not very intensely examined. To get round this obstacle, we had to set up a detour. We reexamined the postulate that tied the "aha-experience" to the discovery of theories striving for truth. We propose to take a more pragmatic stance: from an evolutionary point of view, truth is less important that the discovery of a viable solution. If the "cognitive emotion" had been actually selected to detect these good solutions, it is very possible that it is triggered by a representational system that integrates the disciple's life in a coherent and purpose series of events where he has a specific role to play.

Our pragmatic account of conversion does not deny the importance, in many aspects of the intellectual life, of the quest for truth. But this latter is considered as one of the forms the search for solutions can take. If religious systems have been so successful throughout history, it is probably in part because they were able to propose comprehensive stories explaining the past causes of today's misfortunes and a detailed way to get a better life, in this world or in another one.

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