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# *Evolutionary Psychology of the I/Me and the Idea of the Immortal Soul*

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## Introduction

**A**s this Congress is devoted to the evaluation of Darwin's impact on the intellectual world and the power of evolutionary science to explain the apparently spiritual side of humans, I will present an evolutionary scenario of the emergence of the concept of I/Me and, consequently, of the concept of the immortal soul. The approach is the one that Sá-Nogueira Saraiva (2006) christened "functional Ethology".

In this paper, I will present the emergence, first, of a memory space in lower vertebrates, then of a mental space in mammals (birds will not be considered as they are external to our evolutionary line); after that I will consider the cognitive changes that characterize the genus *Homo* and, finally, the appearance of the I/Me in *Homo sapiens* proper. I will end this paper with a theoretical proposal that aims to explain the emergence of the idea of the immortal soul.

## The ethological approach

Brain in special and the nervous system in general, have two specific functions: to perceptually detect, isolate and amplify environmental features that are important to the survival of the organism; and to generate internal changes leading to behaviours that deal with those features in a way that leads to survival. Since Uexküll (1923; Uexküll & Kriszat, 1934) it is recognized that these two functions occur together in what may be termed the functional, or function cycle, later modified by Lorenz (1935) into what became to be known in English as the Innate Releasing Mechanism.

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In this formulation, the phenomenonic world of each species is composed of several independent moments, each defined by which function cycle is active. Which function cycle is active depends on motivational levels (the internal state of the organism) which determine what the organism seeks and reacts to, and on the environmental cues (releasers, in Ethology) that are present in the environment. The phenomenonic world of each species is, therefore, determined by the architecture of its motivational structure and the consequent function cycles.

The motivational architecture seems to replicate the problems each species has to solve when dealing with its environment (Tinbergen, 1951, Baerends, 1970, 1976, 1984; Hinde, 1982). This architecture, found in all the species in which it was researched (wasps, fishes, gulls and cats) is based on “causation centres” that, when active, make the organism search and react to specific stimuli: stimuli for mating, for nest material, for intruders on the territory, etc. When a given centre is active, the others are inhibited (an organism cannot behave in two different ways).

The activation of a centre determines what the organism will perceive and what it will do. For instance, most animals react to the same configuration with different behaviours according to what centre is motivated. Thus, the same stimulus may be “prey” or “offspring” in different internal states of the organism. The phenomenonic world of the organism therefore changes according to which centre is active.

My proposal is that this motivational architecture, based on function cycles and centres, is at the origin of the I/Me.

### **The internal reference point**

In motile organisms with a nervous system there must be a point in space about which things happen. It is the relative position of stimuli to the organism (“to the left, to the right, above, below”) that determine the orientation of behaviour. As far as I know there are no studies on the location of this point, but it is likely that it roughly coincides with the head. This is because the brain and head are the focal points on which outside stimulation impinge (eyesight, smell, hearing, are all located in the head). Also, the mouth is, for most species, the equivalent to our hands, and the animals mandibulate in the same way as we manipulate. The centre is the head and not the whole body: in mammals, when an animal feels pain on the posterior part of its body, it will try to attack the aggressor; but if there is none, the animal may attack its own body (Rasa, 1987). Also, a rat, if deprived of nesting material, will carry its tail to the nest place (Eibl-Eibesfeldt, 1963, and I made the same observation in more species of Murid rodents). Therefore, there is nothing like the concept

that the body is part of the Self: whatever is far from the head is treated as “environment”.

We may therefore conclude that the central point in which stimulation converges and from which behaviour diverges is located on the head. I will name this spatial centre point as Internal Reference Point, or *irp*. The *irp* is a conceptual construct that is necessary if we want to understand movement and behaviour from the standpoint of the animal: it is the center of its world. As the *irp* is the centre of the animal, it is also the *subject* of the function cycles; and the parts of the environment that are perceived and acted upon by the function cycles are the *objects*.

As we have seen, the world of the animal continually changes according to which motivational centre and function cycle is active; therefore, the *irp* is also forever changing according to the activation of motivational centers and function cycles. The *irp* is, consequently, a stable point in space, but it connotes the environment in different ways in consecutive moments: there is nothing like a continuity of the subject. To put this another way, there is a subject, which we can locate in the *irp*, but the subject does not possess any qualitative continuity: as I have already noted, exactly the same stimulus can be perceived and acted upon in totally different ways according to which motivational centre function cycle is active. The *irp* is defined expressly as a phenomenological point, which may be characterized through experimentation.

The organisms that have no memory capacities therefore live in a strict “here and now”.

### **Memory and the *irp***

Several species (invertebrates, mostly) seem to mainly rely on innate function cycles (for a defence of the use of the innate concept, see Sá-Nogueira Saraiva, 2006), often coupled to very local memory mechanisms, that last only for a very specific period and in a specific context (for a extensive review, see SáNogueira-Saraiva, 2003). However, in vertebrates more generalized learning seems to be the rule. There are two main kinds of process that deserve attention here: releaser assimilation and true association.

### ***Releaser assimilation***

This is what is known as *stimulus substitution* and *response transfer* in learning studies. If a stimulus to which an animal normally does not react (a *neutral stimulus*) is closely followed by a releaser (in conditioning terms, a *reinforcer*) it is assimilated to this reinforcer: after some pairings, the

neutral stimulus will be a *learned releaser* (a *conditional stimulus* in the terms of Pavlov). This very well known phenomenon may be exemplified by the celebrated study of Moore (1973) on pigeons inside a Skinner box: the key that lights up immediately before the reinforcer is either “eaten”, “drunk”, or “paraded to” according to the nature of the reinforcer: food, water, or a female.

For this to happen, it is necessary that a trace of the neutral stimulus remains accessible to the *irp* when the stimulus is no longer present: the animal’s *irp* is perceiving the reinforcer in the environment but it must also have access to a trace of the neutral stimulus. This trace must be in memory, and releaser and trace must coexist in the *irp* so that any transfer from the releaser to the neutral stimulus may happen.<sup>1</sup> Not all memory traces are transferred to all neutral stimuli: there are stronger and weaker candidates for transfer, as is known from the “constraints on learning debate” (see Shettleworth, 2010).

Therefore, the *irp* is influenced both by the motivation, the memory traces and the perceptual space. For simplicity let us call them *motivational background* (*mb*), *perceptual field* (*pf*) and *memory trace* (*mt*). What happens in the *irp* is further determined by processes such as memory span and transfer selectivity rules, background-foreground detection and many other processes, but I will not consider them here (see SáNogueira-Saraiva, 2003, for an analysis of some of them). It can, therefore, be claimed that the *irp* is activated by a given motivational background, which determines what the perceptual field will notice and by the memory traces.

### *True association*

In reptiles and fishes it is not clear whether the memory trace lasts for more than a few seconds. But in mammals and some bird groups memory traces are stored independently of their pairing with releasers. A new neutral stimulus will usually be investigated (“exploration”) and the results of the investigation will be stored (“latent learning”). The organisms will be able to recall the stored information when needed. An example may be in order. In what is known as “conditional inhibition” a rat is exposed to a neutral stimulus (a light, for example); the animal will show investigatory responses to the stimulus that will fade in time. This is the first part of the experiment. If, when these responses fade to the asymptote, a reinforcer is paired with the neutral stimulus, the animal will learn the connection between the neutral stimulus and the reinforcer more slowly than an animal to which the neutral stimulus was not shown in the first part of the experiment. The interpretation

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<sup>1</sup> The process of transfer from a releaser to a neutral stimulus itself deserves careful analysis; but this is not the place for it and the reader may find it in SáNogueira-Saraiva (2003)

is that the two animals differ in knowledge: the animal that has been exposed to the neutral stimulus has learnt that it predicts nothing (no change in the environment) and therefore the animal must unlearn this knowledge and learn that it actually predicts the reinforcer; the other animal just has to learn that the neutral stimulus predicts the reinforcer, and the task is, therefore, mastered faster. No such difference is found in the reptiles and fish that have been studied (see Pearce, 2008, for a review), which is congruent with the view that a neutral stimulus is not represented *per se*: unless it is assimilated to the releaser, it will be quickly forgotten.

This difference is important because in mammals a neutral stimulus has its own representation in the memory space. This representation in memory can, therefore, be associated with what is being presented in the perceptual field. Animals can, thus, really associate stimuli and more distant, less volatile memories, instead of just assimilating a stimulus to a releaser. This new capacity is sometimes called “stimulus-stimulus association” or “true classical conditioning”. For stimulus-stimulus association there must be some kind of “space” for memories to interact with the *irp* and its contents. The *irp* is determined by the perceptual field, but this perceptual field may associate with memory traces that have been stored and that can be recalled. As before, the *irp*'s contents stem from the perceptual field and from stored memories, but as memory traces of neutral stimuli are stored in some sort of long term memory, the animal can perceive what is out there but also what is in its memory. Thus we find what may be called a mind – memory+perception – even if a very simple one. To this “proto-mind” I will call “*Representation Space*”, or *repsp*: the combination of memory space, perceptual field and internal reference point. In the Psychology of our own species we find similar formulations, such as Baddeley's memory/attention model (Baddeley, 2007; Baddeley *et al.*, 2009).

It is from the connection of the *irp* with both perceptual field and memory space that the modern I and Me will emerge, as we will see later.

### **Summing up**

In animals with only dedicated memory systems the function cycles are based on the motivational activation of the *irp*; this activation makes the *irp* sensitive to a particular set of releasing stimuli to which the animal reacts with a particular set of fixed behavioural patterns. The *irp* is mutable according to which motivation is dominant. The motivational centres determine what the filters of the *irp* are – they define the releaser to which the animal responds – and thus they determine the connotative quality of the *irp*.

When response transfer becomes possible we have to posit the existence of a perceptual memory system that keeps a representation of the neutral

stimulus until the releaser is presented. When this happens, the memory of the neutral stimulus is connected to the Releasing Mechanism (that is, the Motivational Centre) and the neutral stimulus thus becomes a learned releaser. (The *irp* corresponding to a given motivational centre is, then, enriched through learning, but the learnt releaser is functional only when the motivational background in which it was created is active).

Finally, in exploratory animals, neutral stimuli are stored in memory independently of their connection to another motivational centre: the stimuli are, thus, actually *known*; the *irp* may be influenced both by the perceptual field and by the memory space and associations *in the mind* become possible.

### The genus *Homo* and its inovations

Primates are characterized by unusually complex *irp-repsp*. As we have seen, in vertebrates there usually are privileged connections between neutral stimuli and motivational backgrounds – neutral stimuli that fit into an “animal” gestalt are better candidates for learned releasers for prey, for instance. In primates these connections seem to be weakened and new sets of rules of associations seem to emerge.

For example, in vervet monkeys stimuli are preferentially linked according to family relations: the animals in a band know that if an infant cries its mother is more likely to run to her aid than other animals. Also, animals seem to codify rules of reciprocity: if a male screams for help, the other animals seem to expect that the helper will be a male that has been previously helped by the help demander (Seyfarth & Cheney, 2000). There is, it seems the superposition of a non-perceptual and non-contiguity logic to association: other animals are linked according to their relations and not according to the reinforcers they predict. There are, therefore, “minded” rules for the representation within the *repsp*.

These “minded” rules seem to apply mostly to the knowledge of agents; it seems that the physical world is conceived in a rather different way than in our species, the notion of causal connection being quite alien to the way they represent the relations between physical objects (Povinelli, 2000; Call & Tomasello, 2008). Furthermore, even in apes, in spite of very intensive research, it has been very hard to demonstrate theory of mind (the knowledge that other apes are minded creatures), at least in the manner we do (Tomasello & Call, 1997; Call & Tomasello, 2008; Penn *et al.*, 2008). It is with our own genus, *Homo*, that the “minded” rules are best expressed, and, as we will see, those rules partly explain the emergence of true theory of mind.

### *The late acheulean revolution*

Sá-Saraiva & Sá-Saraiva (submitted) maintained that by the late Acheulean, with *Homo heidelbergensis* (recently validated as a species: Mounier *et al.*, 2009), a very extensive modification in mind and behaviour was in place. They claim that form imposition, long sequences of behaviour and non-utilitarian practices, all of which are identified from archaeological remains from the Late Acheulean (about 500 kyears ago), imply that some form of language was present and that the bases of the sense of the I were already present. I will review their conclusions and present the implications for the evolution of the I and Me.

*Form imposition.* The evidence for form imposition comes from bifaces which seem to have sometimes been well formed into tri-radial patterns (e.g. Wynn, 2000; Le Tensorer, 2006). The scant vestiges of woodworking (Thieme, 1997, 2005) corroborate this interpretation, as do the data that suggest that shelters were built in Bilzingsleben (Mania & Mania, 2005) and possibly in Terra Amata (Villa, 1968): both woodworking and the construction of a shelter were probably done according to a mental plan. The use of prepared cores (short review in Coolidge & Wynn, 2009, 155-161) further supports this claim.<sup>2</sup> A prepared core is flaked in such a way that when struck at a precise point it will yield a blade that can be used as a tool without further modification; it therefore seems to imply some sort of mental planning.

The meaning of this set of data for the I and Me is the following. Never before in evolution were animals capable of imposing a more or less arbitrary shape into matter. Shape imposition implies that the *repsp* was of a sufficient memory capacity to store, in memory alone, a shape that is compared to the input from the perceptual field – the actual result of knapping is constantly compared with the mental template. This means that the *irp* is now as strongly determined by internal images as it is by perception.

*Long sequences of behaviour* are attested both by well formed bifaces, perhaps worked with two kinds of hammers (Wynn, 2000), but also by the work on spears (Thieme, 1997, 2005), which requires the choice of a tree, barking, smoothing and point shaping of the trunk. The find that Late Acheuleans sometimes thickened the soil in order to provide a more firm support for poles (Goren-Inbar *et al.*, 2002) also implies long sequences. The use of fire (Gamble, 1999) has the same meaning. We do not know very much about the complexity of the dwelling structures, but their existence is suspected in several cases (review in Gamble, 1999). Taken together, the data suggest that there was a

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<sup>2</sup> However, most bifaces were still crudely made, and in the same site rough bifaces are predominant (WYNN, 2000). This means that prototypization was possible but it was neither mandatory nor frequent.



well developed intelligence of the physical world, linking several operations into an overall plan – episodic memory, therefore, clearly existed and a new kind of perceptual/physical intelligence (*praxianaphoric intelligence*, from the Greek *praxis*, action, and *anaforá*, connection, as Sá-Nogueira Saraiva, 2003, who described the probable rules of this kind of intelligence, christened it). Long sequences of behaviour further imply referential representations, a sense of time (transformation from a previous condition to a new one) and conditional decisions. Also required is the differentiation between the I and whatever is not I; in order to transform A into A1, I must perform action 1 on A. Therefore, long sequences imply a hierarchy of goals and sub-goals with conditional decisions; a sense of past, transformation and future through the action of the I.

The *irp* must, therefore, stand as a subject of future actions that are pre-performed at least partly in thought (in anticipatory memory, the *repspc*), and the conditions for verbal behaviour are present. (In fact, Sá-Saraiva & Sá-Saraiva, submitted, argue that Late Acheuleans had the potential capacity to build both Noun phrases and Verb phrases and to combine them into sentences). If we prefer, all the necessary preadaptations for language were present (Vieira, 2009).

*Non-utilitarian practices* appear to have been rare, but they have been present. Pigments were used (Barham, 2002; Cruz-Uribe *et al.*, 2003) and the fact that a particular hue of red (primary red) was selected instead of equivalent but differently coloured materials suggests that red had a meaning. This meaning was probably just salience: red is the first colour that our species learns to name, (Berlin & Kay, 1969) but even in that case the suggestion is clear: salience was being selected to *mark* things deemed important (either bodies or valued things).

Marking seems to imply theory of mind – the knowledge that other agents have minds and will interpret my behaviour in mental terms –, because it is an act of communication of a mental value (one marks things to show their importance to others). The hunting of big game (Thieme, 1997, 2005) probably benefited from the attribution of intentions both to fellow hunters and to prey (as “putting myself in the prey’s mind” may help in predicting the prey’s behaviour during a hunt).

Marking should be linked with the few instances of “odd object collecting” (d’Errico *et al.* 1989; d’Errico & Nowell, 2000; d’Errico *et al.*, 2002). This is because if odd but non-functional objects were collected, they were attributed a value in the mind, exactly as in marking. Furthermore, odd object collecting may imply reference: crystals were perhaps recognized to have a perfect form – Gestalt – and the Berekhat Ram figurine (a humanoid shape in rock) may have been recognized as similar to a human body (found by Goren-Imbar and examined by d’Errico & Nowell, 2000, who identified evidence of

anthropogenic modification of the manuport). In both cases, a template was related to an object and that relation was valued. As is well known, recognition itself is reinforcing, and in humans symmetry recognition seems to be innate (see Hodgson, 2009, for a review).

Therefore, on top of physical intelligence, there is now a new psychological intelligence, that attributes mental states and representations to others. This was named *prycheanaphoric intelligence* by Sá-Saraiva & Sá-Saraiva, *in press*. Viewing others as minded creatures makes it probable that the I will view itself as possessing the same qualities.

In conclusion, *Homo heidelbergensis* has several differences to the other known animals: a spacious working memory allowing that mental images are as determining of action as the contents of perception; anaphoric rules that determine that what happens outside the organism is represented in memory in long and articulated sequences; and, probably, the capacity of translating the contents both of memory and perception into language, which imply that the *I* pronoun was somehow present.

### Modern humans

There are many certifiable mental differences between *Homo heidelbergensis* and *Homo sapiens* (Coolidge & Wynn, 2009; Sá-Saraiva & Sá-Saraiva, *in press*), but the most important for the evolution of the I and Me is *episodic memory* (Tulving, 2002). Episodic memory is the capacity to link past (and I would suggest, also future) events between them, thus forming a kind of narrative. Thus we all describe our lives or past happenings in a linked way; also, we link future happenings in a similar way when we plan something. Both past and future things must be connected in a meaningful way: *Alice in Wonderland* seems nightmarish because it does not follow any known logic. Therefore, humans don't just associate things, they link them according to a set of rules. As we have seen, there are, at least, two kinds of logic: psyche and praxianaphoric ones. This is not the place to describe them, and I will just give two examples: if we perform an action on an object or an agent, we will expect it to have consequences; for instance, if I strike a stone I will expect it to move or break; if I strike a person I will expect her to feel pain and to react and resent me for my intentions. Those two sets of logic allow for the relation between the conscious I – the *irp* – and both representation space and perceptual field. Therefore, what happens when the *irp* represents a set of interdependent objects or of interacting agents depends on anaphoric grammars.<sup>3</sup>

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<sup>3</sup> These grammars are probably hierarchically inferior to the ones Steven Pinker (2007) proposed. The rules Pinker proposed are more akin to the Kantian *a priori* ones.

## Language and the I and Me

With the evolution of modern language (see Deacon, 1997; Sá-Nogueira Saraiva, 2003; Vieira, 2009, for accounts compatible with this discussion) the I and Me as we know them are possible. The I and Me directly correspond to the *irp*, the difference being that language, probably coupled with episodic memory, allows for a new quality of consciousness. This new quality of consciousness is suggested by the different conscious experience that split brain patients show in the verbal hemisphere (usually the left) and in the non verbal hemisphere (Gazzaniga, 1998). It seems that language allows for self-consciousness, which seems to be absent from the right hemisphere. Even if we still don't know how this new self-consciousness evolved, we must track it to the concepts we used in the previous analysis.

As we have seen, the psychological centre of animals is the *irp*. In language, the *irp* is translated as *I* or (to, for, at...) *Me* and, in a slightly different sense, as *My* and *mine*. The *irp*'s more direct verbal translation is as *I + Verb*. This is because, as we have seen, the *irp* is the centre of the function cycles: all action starts in it, and all that is important in the environment reaches it. When the action is performed by myself, the form will be *I do* (or any other verb). When the action reaches me, the form will be *done to Me*. There are other forms: the genitive (possession, *Mine*), the dative (I am given something, *To me*), the accusative (he looks *at me*). In more flexed languages than English the effect is even clearer. When the verb tenses are distinct enough not to need the pronoun, they will be enough: the *irp* is translated merely as a verb tense, without the pronoun. For instance, in Polish, "I see" is said "Widz," not "Ja Widz"; the same happens in Latin, where "I think" is translated by "Cogito", and in most neo-Latinate languages (Portuguese and Italian: "Penso"; Castillian: "Pienso"). The important point here is that the action itself is expressed, exactly as we posited in the function cycles. When I am the recipient of an action (e.g.: she likes me) the word "me" is necessary, because the action springing from another person may have another target than me, and I must specify it (this happens in all the languages I know). Therefore, the outgoing part of the function cycle is given by *I+Verb* and the ongoing part by *Verb + Me*.

It is also remarkable that the word "I" is just a pronoun: it needs a verb to have any meaning. The idea of the I as a noun (usually translated as the Self, but in German it is *das Ich* and in Portuguese *o Eu*, literally *the I*) comes rather late in cultural evolution (Martin & Barresi, 2006; Sorabji, 2006) precisely because the *irp* is an action generator and a stimulus receiver. This means that the *irp* is pure subject and cannot be adequately objectified as a noun. In contrast, external objects and internal referents are easily objectifiable (this, "a person" or, in Catholic countries, a "soul", not an "I"). In other words,

the *irp*'s function is not to muse upon itself: it is a switchboard between the inside and the outside, not a "thing" to be thought about. The *irp*/I therefore sits in the exact centre of cognitive life; indeed, it is the centre of all mental life, and as such cannot represent itself.

I mentioned action, but the existence of purely emotional and motivational verbs is congruent with what we know about the *irp* being determined by the motivational background. Therefore, *I crave, I love, I hate, I lust for*, and the equivalent *I'm angry, I'm bored* are just expressions of the motivational background. Expressions such as *I'm thirsty* (old German *Ich durste* for *Ich habe Durst*), *I'm hungry, I feel pain* describe the inner state of the organism.

Summing up, the *irp* translates into language as *I* as the outgoing part of the function cycles, and as *me* in the ongoing part. The *I/irp* is the subject, the knower, the feeler, the doer, always from the subjective standpoint. As it is pure subject, it is difficult to objectify it, and the *irp* lacks the capacity to represent itself, just in the same way that an eye does not see itself.

### ***Descentration of the irp***

In spite of being the fundamental centre of the known world, the *irp* can descender from the here and now (and, in some people, from one's own beliefs and attitudes). Because of episodic memory, we can very easily place our *irp* in the past or in the future (when we think about what we should have said or should say in a past or future context) or in another person's body and circumstances. There are many examples of this descentration. A very common feature is that my body is another, different one. There is a particular expression that I found in all the languages I searched for it:<sup>4</sup> "in or at your place/if I were you/if I were inside your skin"; that means that the *irp* changes its body with someone else. Also, in every culture I know, witches, wizards, spirits and gods can assume the body of a wolf, of a crocodile, of a bull, of another person and so on (for examples, see Lévi-Bruhl, 1924, 1927/1963; Eliade, 1951/1968; Métraux, 1957; Hallpike, 1979).

Entering another person's or animal's body is, I will claim, at the root of what is confusingly known as "Theory of Mind" ("confusingly" because there are many forms under the same name, see Gärdenfors, 2003), first described by Premack & Woodruff (1978). In fact, "putting myself into another person's mind" means that I place my *irp* in what I think would be the other person's *irp*. That is, I become the subject of another person. This raises the question of knowing what "being the subject" means.

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<sup>4</sup> Portuguese, Castilian, French, Italian, Rumanian, German and Polish.

### *Ontology and scatology of the I*

If the *irp* is just the centre of function cycles, then, being a subject is not a strictly mental thing. As we saw, the *irp* concept is needed to account for changes in motivation and in the generation of responses. As such, the *irp* is both psychic and behavioural, cognitive and emotional. The subject denotes, connotes, reacts, searches, aims, wants, and all those mental states of the *irp* connect him to the environment. The feelings by the *irp* are the feelings that accompany being alive, and therefore that accompany action and reaction.

Therefore, the feeling of existence is neither corporeal, as Leenhardt (1947) has claimed with wide audience (*e.g.*, Gil, 1980; Ferreira, 1969, in spite of his very accurate phenomenological descriptions), nor mental, as Neo-Platonist or Neo-Cartesian views would suggest. This may explain why Lévi-Bruhl (1927/1963) maintained that the European concept of Soul does not have an equivalent in primitive societies: the Christian concept of soul sharply divides *psyche* and *soma*; whereas in other cultures it is not necessarily so.

The non-Christian tradition is closer to what we would expect the 'soul' to be if it were the direct translation of the I and the *irp*. Being connected to the world through emotion, perception and action, the experience of the *irp* could never be only mental: it is neither mental nor material or bodily. It is *existential*, in the sense that it is the pure feeling of 'I exist'. That feeling needs a body to express itself, but the body is not central to it, in the sense that, as in animals, the *irp* does not correspond to a bodily scheme (recall that animals will inflict self-injuries when a chain causes severe pain on a hind member; the 'leg' is attacked as if it were the causing agent of the pain). This is evident in all the shamanic traditions that seem to characterize our species: the soul leaves the body and, while outside it, performs a series of acts, either in mystical or in real space. The "*free soul*" (Hultkranz, REFF) that is responsible for the acts is, therefore, defined as a *will*, which can act according to its intention.

Thus the 'I' is felt as agency and intention and in many cultures it corresponds to the notion of soul, or, to be more precise, the "*free soul*" (Hultkranz, 1953/1997).

### *Scatology of the I*

As we have seen, the most important part of the experience of the I is not the body, but experience itself. This is because of the way the *irp* represents function cycles: as intentions and representations, not as behavioural chains implying a result. The fact that the experience of the I is felt as independent from the body has an important consequence for scatology.

Experience of the *irp* cannot tell me that I am mortal because it is just a continuous feeling of being. Children must learn with adults that they are

mortal (Bloom, 2004); death is never experienced until it happens, and when I see someone that dies I don't feel the experience of dying, I only notice that the body of the dead person ceases to be animate. This does not tell me that his *irp* ceased activity; it only tells me that the *irp* no longer acts on the body; it may either be gone or be dead. However, I cannot experience the death of the *irp*, that is, I cannot remember not being conscious or being unconscious (and even less can I remember being dead). In consequence the possibility of thinking that the *irp* of the dead person ceased to exist has no experiential ground on which to base itself. Therefore, it is likely that I will think that the dead person's *irp* is just gone. Put in another way, I have the belief that my body will die because of inference from all the persons I know. But my own feeling of myself (the feeling of the *irp*) has no hint of its own cessation. Hence the concept of the immortal soul: the non objectifiable *irp* imagines that it will go on existing in spite of the death of the body because it has no cognitive means of experiencing the cessation of its own activity (see also SáNogueira-Saraiva, 2003).

Vera Pereira is currently working empirically under this hypothesis and the data so far collected and analysed corroborate it (Pereira *et al.*, sub.).

### Conclusion

I have discussed the emergence of the sense of the I, from its very lowly origins to the flourishing state it has in our species. It began as an internal reference point – conscience of the releasers of function cycles –, then, with the advent of memory it became a representation space, of small proportions. In mammals and some birds a true mind – a representation space – appears. But it is only with ancient humans that the mind has a true grammar that represents who did what to whom, how is A connected to B and C and what do A, B, C compose when together. The I emerged as a way of linguistic expression of the internal reference point, at the centre of perception, as it always was, but also of the mental landscape that is the hallmark of our species. The conscience of existing – the feeling of the *irp* – is the *I + Verb*, agency, emotion and thought. Lacking the capacity of representing its own inexistence, the empirical knowledge of bodily death does not imply the death of the *irp*; the cognitive pattern from which beliefs in an after death life are thus present in *sapiens*. The analysis of the ontology of the I/Me also explains the origin of the probably universal belief in immortal death.

As this scenario is based on the assumption that the *irp* evolved to become, in our species, the I/Me, and the scenario seems to explain the belief in an immortal soul, I will conclude that a natural philosophy of the mind, based on evolution, is able to explain one of the kernel concepts of most religions.

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