A Clinical Perspective on "Theory of Mind", Empathy and Altruism

The Hypothesis of Somasia

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ABSTRACT

The article starts by recalling the results of recent experiments that have revealed that, to a certain extent, the "ability to simultaneously distinguish between different possible perspectives on the same situation" (Decety and Lamm 2007) exists in chimpanzees. It then describes a case study of spatial and temporal disorientation in a young man following a cerebral lesion in order to introduce the hypothesis that this ability is based on a specific process of somasia. By permitting self-other awareness, this process also provides subjects with anchor points in time and space from which they can perform the mental decentring that enables them to adopt various perspectives. This process seems to be shared by humans and certain animal species and appears to be subdivided into the processing of the identity of experienced situations, on the one hand, and of their unity on the other. The article concludes with a critique of overly reflexive and "representational" conceptions of theory of mind which do not distinguish adequately between the ability to "theorise" about the mental states of others and the self-other awareness ability (which is automatic and non-reflexive).

Keywords: Social cognition, theory of mind, empathy, altruism, neuropsychology, somasia, humans, animals, mental states, decentring.

1. INTRODUCTION

In their seminal paper published in 1978, Premack and Woodruff stated that "an individual has a theory of mind [ToM] if he imputes mental states to himself and others" (Premack and Woodruff 1978). Since then, research into ToM has flourished, both in humans, and more particularly in autistic children (Baron-Cohen et al. 1985), as well as in various animal species. A number of studies have emphasized the close link between empathy and ToM, with "both [involving] an ability to simultaneously distinguish

between different possible perspectives on the same situation" (Decety and Lamm 2007). In 2008, Call and Tomasello attempted to draw a conclusion from research relating to ToM in chimpanzees. They concluded that it was no longer possible to answer the question posed by Premack and Woodruff with "a simple yes or no" (Call and Tomasello 2008, 187). More precisely, they considered it necessary to distinguish between two levels of definition of ToM. The broader level is that comprising the understanding of other people's goals and intentions as well as of their perceptions and knowledge. At this level, there is now sufficient evidence to affirm that "chimpanzees do have a theory of mind" (Call and Tomasello 2008, 191). The second level, which corresponds to ToM understood in a narrower sense, relates to the understanding of false beliefs. Here, their answer was negative, although still cautious (Call and Tomasello 2008, 191).

The present article takes as its starting point the summary produced by Call and Tomasello and considers it to be an established fact that chimpanzees are able to represent to themselves the mental states of others, at least in part [1]. On this basis, it attempts to propose new hypotheses designed to account for earlier observations and, at the same time, to consider possible future observations. To this end, it will start by recalling the results of a number of recent experiments performed with chimpanzees before comparing these with the results of clinical observations obtained from humans. This will make it possible to formulate the hypothesis that a process of somasia is a necessary condition for the decentring that makes it possible to put oneself, to a certain extent, "in another subject's place" in order to understand his or her mental state. Based on an analogy with two distinct types of aphasias and agnosias, it will then go on to suggest the existence of two types of somasic processing that make it possible to determine both the identity and the unity of the experienced situation. Finally, it will return to the generally accepted definitions of ToM in order to stress the fact that the various studies conducted to date have undoubtedly paid too much attention to the ability to "theorise" or "represent" the mental states of others and not enough to the fact that the most important thing is to distinguish between the self and the other subject in order, to a certain extent, to "put oneself" in this subject's position.

[1] Some researchers, however, remain sceptical about this ability (see, for example, Povinelli and Vonk 2003; Penn and Povinelli 2006; Penn, Holyoak, and Povinelli 2008; Penn and Povinelli in press).

2. Evidence of ToM in chimpanzees

Two recent series of experiments have tested the ability of chimpanzees to take account of what others can see or hear (Hare et al. 2006; Melis et al. 2006). These experiments placed chimpanzees in a situation in which they had to compete for food with a human experimenter. The experimenter and the room in which the experiments were conducted were already familiar to the chimpanzees. The experiment itself was preceded by a preparatory phase intended to make the chimpanzees understand that they were in a competitive situation: the experimenter faced some of the food and turned his back on the rest of it; if the chimpanzees approached and grabbed the food behind the experimenter then they were allowed to take it; if, in contrast, they approached the food located in front of the experimenter then this was removed as soon as they tried to grab it.

The ensuing experiment was then designed in such a way that some routes permitting access to the food were visible to the human experimenter whereas others were not. In one version, in which the aim was not to be heard by the experimenter, one of the access routes to the food was noisy whereas the other was silent. When the chimpanzees took the route which allowed them to be seen by the human experimenter (or chose the noisy route), the experimenter took away the food. When, in contrast, the chimpanzees chose to approach the food via the route that was hidden to the human observer (or approached it via the silent route), they were able to get to the food. To get the food, the chimpanzees therefore had to avoid being heard or seen by the experimenter. In other words, they had to take account of what the experimenter could know about the situation.

The results of these experiments showed that chimpanzees do indeed take account of what the competitor can see or hear and are capable of dissimulation. In the absence of any competitor, they did not show any preference for either of the routes giving them access to the food. In contrast, when the competitor was present, they preferred the route that allowed them to hide their approach as of the very first attempt (there was a slight improvement in performances over the course of the trials but not such as to make it possible to conclude that the behavior was learned during the experiment). In a certain number of cases when the competitor was present, they even chose an indirect approach in which they first distanced themselves from the food in order to then disguise their approach better (Hare et al. 2006, 508).

The authors considered these results to be consistent with many other observations proving that chimpanzees are able to understand the mental states of others (Tomasello, Call, and Hare 2003a; 2003b). At the very least,

they claimed, chimpanzees are able to understand what others can see or hear and hide certain information when it is of use to them to do so. The authors nevertheless agreed that a behaviourist explanation could be proposed to account for each of these observations – in each specific case, the chimpanzees would learn to associate a behavior with a certain stimulus. However, the great variety of situations involved mean that it is more economical to adhere to the hypothesis that chimpanzees are able to understand what others perceive:

> The best evidence that an individual understands another's perception is when the two individuals' perceptions differ (e.g. *they see different sides of a barrier*), and the observer acts on the basis not just of what she herself sees or knows but also on the basis of what the other sees or knows. (Call and Tomasello 2008, 189-90)

It would seem that the ability of chimpanzees to place themselves "*on the other side of the barrier*" (our emphases) in this way is clearly demonstrated by these experiments in which the animals had to compete for food. These observations, seen in combination with many others, make it possible to conclude that chimpanzees are able, at least to a certain extent, to put themselves mentally "in the place of others", or, to put it another way, that they are capable of a certain decentring (as the barrier metaphor suggests).

"To a certain extent", we said. But to what extent? In this specific case, what might "put oneself in the place of others" actually mean? What precisely is the "decentring" in question? One experiment which went further than those mentioned above was the study conducted among autistic children with the puppets Sally and Anne (Baron-Cohen et al. 1985). This latter experiment attempted to test the children's understanding not only of the knowledge but also of the false beliefs of others. The results led the authors to conclude "that the autistic children did not appreciate the difference between their own and the doll's knowledge" (Baron-Cohen et al. 1985, 43). However, this type of research into the understanding of false beliefs has also been conducted among chimpanzees. In an experiment performed by Hare et al. (2001; Hauser 2005; Call and Tomasello 2008), a dominant chimpanzee and a subordinate chimpanzee were placed in a situation in which they competed for food.

The subordinate subject was always informed of the location of the food (since she saw it being placed there). In one version of the experiment, the dominant sometimes saw where the food was placed (she was informed) and sometimes she did not (she was not informed). In the other version, the dominant was always informed of the initial hiding place of the food which was then subsequently moved, either in her presence (she

was therefore informed of the change of location) or in her absence (she therefore did not know that the food had been moved and possessed a false belief concerning its location). If chimpanzees are capable of understanding the false beliefs of others then, in such a case, the subordinate subject should go to the food without fear because she understands that the incorrectly informed dominant will go to the wrong place.

In contrast, if she simply believes that the dominant is uninformed then the behavior of the subordinate will be less assured. The experiment showed that chimpanzees are able to distinguish between situations in which the competitor is informed (knowledge) and situations in which it is not informed (ignorance). In contrast, they are not able to distinguish between situations in which the competitor is not informed (ignorance) and those in which it is incorrectly informed (false belief). When seen in the light of other observations, this experiment clearly makes it possible to conclude that "chimpanzees understand knowledge-ignorance, but not false belief" (Call and Tomasello 2008, 191). This is different from the case of young children who, as of the age of one to two years, are able not only to understand that another knows or does not know something but also that the other person possesses a false belief (Call and Tomasello 2008, 191).

It is this set of observations that led Call and Tomasello to distinguish, as we have seen, between two levels in the definition of ToM. Since they are able to understand what others see or hear, chimpanzees possess a ToM in the broad sense but, being unable to understand false beliefs, they do not possess a ToM in the narrower sense. However, in the remainder of this article, we shall not pursue this important distinction but will instead focus solely on the first level of ToM, namely the ability to decentre oneself in order, to a certain extent, to put oneself "in another's place" and take account of what this other perceives or knows. We shall also attempt to suggest other possible observations based on clinical observations of human beings.

3. A new hypothesis: somasia

We shall start by presenting a relatively detailed description of a case study (Duval-Gombert 1993; Bellamy et al. 1994). This involved a patient, FM, who had suffered a sudden cardiac arrest (SCA) at the age of 19 years, due probably to an acute viral myocarditis. Several years later, he still manifested significant neurological sequelae which regularly required him to stay in a centre for brain injury rehabilitation. The neurologists treating him referred to bodily disorders, spatial disorders and problems relating to

verbal evocation. They also noted an anterograde amnesia coupled with a retrograde amnesia.

FM retained some knowledge of history but was unable to organise dates or historical characters relative to one another. He was, for example, able to associate Robespierre with the guillotine and the Chouans but was unable to situate this period of the French revolution on the timeline. Similarly, he would classify Chopin as coming a century before Mozart or Louis XIV as being significantly later than Napoleon. Knowledge of history was therefore preserved but the ability to distinguish a "before" and an "after" was lost. This loss of temporal anchors was also observed when FM was asked to situate himself in time. When asked about the day of the month, he could, for example, answer "Tuesday". When it came to knowing the day of the week, he based his answers on his activities. He knew, for example, that his neuro-psychological consultation took place on Thursday because this was the day before he left to go home on Friday. However, this technique could also catch him out: if his consultation was moved to another day then he would be convinced that the day of the new consultation was a Thursday. Like some children who are autistic, FM also found it difficult to cope with change. A single change to his therapist's desk gave him the feeling that the desk never stopped changing. The absence of one of his therapists at the habitual time or a change to his timetable was a source of disturbance and distress.

When asked to tell a story based on pictures which he first had to place in the correct order, FM was unable to do so. Nothing in the material encouraged him to choose one order rather than another and adhere to it and he did not group the pictures together to form a set corresponding to a situation. In consequence, he would be satisfied with any order and each of the pictures could serve as a pretext for any number of different stories. This same absence of situational permanence could be observed in the way he recounted familiar stories from memory. When asked, for example, to tell the story of Little Red Riding Hood, FM would introduce characters taken from other stories (about which he had retained some knowledge).

In addition to Little Red Riding Hood and the wolf, he might, for example, bring in an ogre or even Tarzan. If the person conducting the examination reminded him of the grandmother then he might turn her into "Granny", "Mamie Nova" [2] or "Mamy Blue" [3]. He introduced a sick grandson to whom the grandmother had just given something to eat. It was

[2] Brand of dairy products (yoghurts, cream cheese, etc.) that is well known in France.

[3] Song by Nicoletta that was very successful in France in the 1970s and is still played regularly on certain radio stations.

therefore possible to conclude that there was indeed a story with characters in it, but that there was no possible permanence of this story and these characters. Characters that generally form part of the story could be omitted and others could be introduced. And this could change constantly in a completely arbitrary way. Everything suggested that the arbitrary nature of the stories and the characters they could contain was not constrained by the permanence of a situation, namely that of a specific story.

A similar disorientation was observed at the level of space. In the same way as he retained a knowledge of history, FM also retained some knowledge of geography. However, just as he was unable to organise historical persons, dates or ages relative to one another, he was also no longer able to situate places relative to one another. He could, for example, associate the city of Lille with the North, mining communities and the singer Pierre Bachelet [4]. He could equally well associate Dijon with mustard. However, he was incapable of locating these cities, even approximately on a map of France either when asked to draw the map himself (he drew a simple circle) or when an outline map was given to him (in which he was unable to orient himself: he was not able to situate the West relative to the East or the top relative to the bottom).

A more precise observation clearly shows just what this disorientation consisted of. During the week, FM was accommodated at a centre for brain injury rehabilitation located in a former château (the château des Landes [5]). However, at the weekends he returned to his home which was located approximately 80 km from the centre, in the town of Montfort, where there is also a château. During a consultation at the centre, the researchers showed him a photograph of the château de Monfort and asked him to identify it. He answered as follows:

> It's a lovely château. Seen from a distance, it's the château des Landes. That reminds me of something […]. I'm near A. If I was at home, I'd say it's the château de Montfort […]. But since we're in A, I couldn't say it's the château de Montfort. If I'd been in Montfort, I would have said it's the château de Montfort.

In some way or other, FM had indeed recognised the château de Montfort. His visual recognition was intact. However, this did not enable him to conclude that the photograph was indeed of the château de Montfort since he was not in Montfort at the time the researchers showed him the picture. FM seemed to refer exclusively to the place in which he was located at the

[4] Now deceased French singer. One of his songs from the 1980s that deals with life in the mining towns in the North of France is still well known today.

[5] The names of localities *have been changed to help* preserve *anonymity*.

time and did not seem able to perform the mental decentring necessary to accept that the photograph visible directly next to him might represent a reality at some distance from him. His environment therefore seemed to be limited to the immediate context. Everything he did suggested that he was in some way "fixed" in the present situation and was unable to distance himself from it.

To describe patients such as FM, Jean Gagnepain ([1991, 1993] 1995) has proposed the hypothesis of asomasia, that is to say the loss of a process of somasia. The asomasia hypothesis postulates that in order to stay the same in different situations, it is necessary to set a limit (that Gagnepain suggests calling the *soma* [6]) which simultaneously separates and constitutes the self and its environment. This limit makes it possible to distance, or to some extent decentre, oneself mentally from the immediate situation. It therefore allows subjects not to be held captive by the situation and permits what Decety and Jackson (2004, 81) refer to as "psychological continuity over time and space". Soma therefore enables individuals to hold onto an anchor point with reference to which they can situate a self and a non-self, a before, a now and an after, a here and a there. It permits them to adopt a viewpoint on the basis of which they can construct their perspective on the world.

The hypothesis of an absence of soma in patients such as FM makes it possible to explain their disorientation in both space and time. In the absence of an internal "anchor point", they are reduced to clutching at external fixed points (timetables, places, persons). However, these external anchor points subjugate them and they become extremely dependent on them. One consequence is that they always tend to do what those around them expect them to do. For example, FM's opinions could be easily influenced and he himself said that he was in a state of constant doubt. All opinions appeared plausible to him but none seemed certain. This is because nothing in him could ensure the permanence of *one single* opinion with which he could confront all the others. Conversations with him therefore became totally random: anything could be said and the subject of the conversation could change continuously (a conversation with FM tended to descend into a succession of non sequiturs). This dependence also makes such patients extremely vulnerable. The slightest change to their external anchors can be extremely disturbing to them and triggers panic attacks.

[6] From the Greek *soma* ("body") because the process in question is in some way that of the "psychic body", a limit that makes it possible to stay oneself even though the body itself changes (growth, aging). It resembles other expressions such as "skin-ego" (Anzieu 1989).

The care team (this was the case at the centre for brain injury rehabilitation at which FM stayed) must therefore make sure that certain fixed elements are present in their lives (consultation times that are always the same, for example), something which is not always possible.

4. Application to animals

How can observations of this type of patient and the hypothesis that they lack the ability of somasia help us take a fresh look at the questions we have raised concerning the existence of a ToM in chimpanzees as well as in other animal species? The answer is that we think that all the convergent observations that enable us to assert that chimpanzees are indeed able to understand the mental states of others also argue in favour of the existence of an ability of somasia in animals. An account of these observations in terms of somasia provides a more satisfactory explanation of them than any that has been advanced to date and enables us to develop new hypotheses that will require the collection of new observations.

What, one can ask, did the experiments performed among chimpanzees that we have presented above actually show? They showed that when placed in a situation in which they have to compete for food, these animals are able to take account of what the competitor is able to see and hear in order to approach the food without him/her being aware of this. Now, taking account of what another is able to see and hear is not simply a question of representation or "theory". It also requires a "self-other awareness" (Decety and Jackson 2004) which permits a mental decentring in order to "put oneself in the other's place" and understand or imagine what this other, in this place, sees, hears or is able to know, etc. And this "self-other awareness" itself presupposes the existence of a limit, which we call soma, which, by separating the self from the environment, provides an anchor point (a point of view) starting from which decentring then becomes possible (both in time and space). In the absence of any such limit and the "point of view" it makes possible, the chimpanzees involved in these experiments would undoubtedly be just as disoriented as patients like FM and would fail to get the food [7].

[7] Hypothesizing that chimpanzees have an ability of somasia simultaneously implies predicting the existence of asomasic chimpanzees. Confirming this prediction would be the best way of proving the relevance of our hypothesis. However, it is probable that this would be difficult. It is unlikely that asomasic animals who are consequently unable to orient themselves in space, would be able to survive under natural conditions. It would therefore be better to try to find such animals in captivity. Is it possible to find individuals

At a more basic level, the ability of many species to understand that it is possible to go round an obstacle in order to retrieve an object that is located behind it might also be explicable in terms of somasia (see *fig. 1*). In the much reduced experiment that we conducted in line with Köhler's (1925) experiments into "roundabout ways", the cat spontaneously understands that if she cannot grasp the object from one side of the obstacle, then she can go round the obstacle to grasp the object from the other side. Of course, in order to do this it is not necessary for the cat to put herself "in the place" of another. However, she does require a sufficient ability for mental decentring in order to understand that what is not possible from one side of the obstacle might be so from the other side. She must also possess a point of view on the basis of which she is able to envisage another possible point of view.

A toy that is familiar to the cat is thrown to A. The cat rushes to catch it. The object is then picked up and thrown behind the piece of furniture (to B). The cat sees the object from position A through the gap between the wall and the furniture. She first attempts to get to it by passing through this gap to point A. However, understanding that the gap is too narrow for her to pass through and seize the toy, she goes round the furniture to get to B.

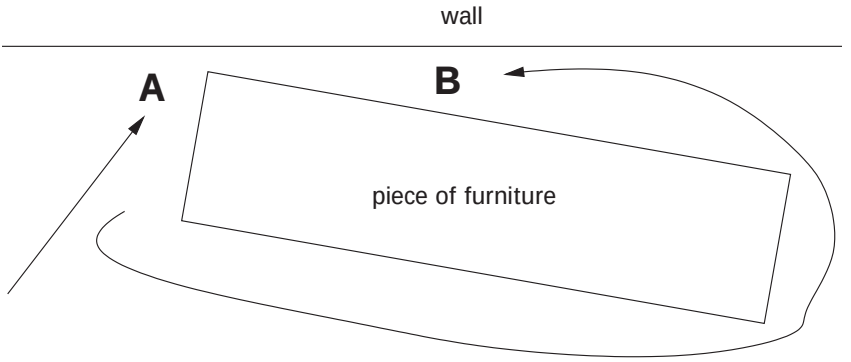

Figure 1. – Cat going around an obstacle.

exhibiting disorientation symptoms that might be due to asomasia among the animals present in wildlife parks or zoos or kept in research centres? This of course calls for new observations to be made.

Somasia is itself without doubt a complex process and it will be necessary to consider applying to the observation of animal behaviour a distinction, relatively well established in the case of humans, between the qualitative processing of identities and the quantitative processing of units. This distinction, which can be attributed to Saussure ([1916] 1983), was taken from Jakobson and Halle (1956) who used it to attempt to explain the existence of two major types of aphasia, namely Wernicke's and Broca's aphasias, in terms of metaphor and metonymy. Gagnepain and Sabouraud (Sabouraud et al. 1963) subjected Jakobson's hypotheses concerning these two groups of aphasias to a critical reexamination before attempting to transpose the identity/unit distinction to fields other than language. At this point, we shall say a few words about the way in which this distinction makes it possible to account not only for aphasic symptoms but also for the symptoms of agnosia before suggesting its trans position to the field of asomasia.

The distinction between Wernicke's aphasia and Broca's aphasia is well known. It corresponds to a difference in the location of the lesion: behind the Rolando scissura in the former case and in front of this scissura in the latter. As far as the symptoms are concerned, Wernicke's aphasia is usually fluent and Broca's non-fluent. With reference to the processes involved, it is possible to describe Wernicke's aphasia as a loss of differentiation and Broca's aphasia as a loss of segmentation (Guyard 1987; Brackelaire et al. 2006). Indeed, in Wernicke's aphasia, patients are lost when they have to choose between *distinctive* features (e.g. unvoiced/voiced as in /p/ ≠ /b/) or between *different* semes (e.g. fork/knife, table/lamp, briefcase/suitcase, telephone/television, etc.). In Broca's aphasia, on the contrary, patients are lost when they have to control the *plurality* inside phonemes or groups of words. In the following example (Guyard 1987), the patient had to repeat two groups of two words – a function word and a noun (see *tab. 1*).

This difficulty in controlling a number of different semes *together* explains the well-known agrammaticism of these aphasics as well as the non-fluent character of their aphasia: in effect, because of the pathology, each seme tends to be treated as a unit and, in a group of words, these patients often retain only the lexeme (for another example of this type of production, see Caramazza et al. 1981, 249).

This difference between a differentiation and a segmentation-related disorder is also found in the visual perception field in which human clinical psychology has distinguished between apperceptive agnosia and simultagnosia (Cambier 1995). In the former case, patients are able to perceive the qualities of the object (dimension, texture, colour, etc.) perfectly well but they no longer recognise them because they can only perceive the object in fragmented form.

Table 1.

Stimulus item	Patient's responses	Our commentary
sa maison / ce garage (his house / this garage)	sa maison / son garage (his house / his garage)	There are three differences at the same time: possessive/ demonstrative gender (F/M) + lexeme → The patient has difficulty controlling more than one difference at the same time and maintains only the gender + lexeme difference.
ce château / la voiture (this castle / the car)	ce château / c'est "la" mais après …? (this castle / it's "the" but after …?)	There are also three differences at the same time: demonstrative/definite + gender (M/F) + lexeme → The patient maintains the demonstrative/definite difference but is unable to repeat the second lexeme.

They are thus "unable to match two objects that are identical in shape or associate an object with the corresponding picture" (Cambier 1995, 185). In the latter, patients perceive the shape correctly but find it difficult to see more than one object at the same time and therefore localise a given object relative to others [8]. These few observations indicate that visual perception combines the identification of qualities and the delimitation of units in order to bring about object recognition and consequently makes it possible to match them based on both their quality and their shape.

More recently, our colleagues Hubert Guyard and Clément de Guibert suggested that this distinction between two types of analysis might make it possible to explain the difference, which is well attested to in the literature, despite a relatively recent divergence of opinions, between Kanner's autism and infantile psychosis (de Guibert, Clerval, and Guyard 2003). These authors hypothesised that there are two types of asomasia.

> Independently of the etiology, while both disorders are characterised by a deficit in the experienced situation (relating to the permanence and continuity of the subject and the environment beyond the vagaries of internal and external events), autistic disorder seems to relate to the unity and cohesion

[8] The distinction between these two agnosias conventionally corresponds to the distinction between the two "pathways" of visual perception: the occipito-temporal (or ventral) pathway and the occipito-parietal (or dorsal) pathway (Charnallet and Carbonel 2000).

> of the situation (which is apprehended in "parcels" or isolated fragments), whereas "infantile psychosis" appears to be a disorder that relates to the identity and coherence of the situation which is apprehended in a way that is confused and disparate. (de Guibert and Beaud 2005, 394)

Persons with autism would therefore attempt to compensate for their deficits in processing the unity of the situation by focusing excessively on the maintenance of identities (thus resulting in the well-known "sameness behaviour" emphasised from 1943 onwards by Kanner) [9]. Conversely, psychotic children would attempt to compensate for their deficits in processing the identity of the situation by focusing excessively on controlling its unity and the breakdown of this unity (games of fragmentation and reconstruction, interactions with others experienced in a fused and invasive manner).

Just as the hypothesis that perception is processed in two different ways based on the difference between apperceptive agnosia and simultagnosia opens up interesting avenues of investigation that may help account for the complexity of perception, including in animal species (Le Bot et al. 2012), the hypothesis that situations might be processed in two different fashions could point the way to a reexamination not just of human pathology but also of the way different species of animals monitor, or fail to monitor, their own identity and unity, as well as the identity and unity of other members of their species and those of the situations in which they find themselves (for example "what is familiar/unfamiliar, usual/unusual, etc.?"). It may therefore also make it possible to come to a better understanding of what it is that underpins the ability of these species to interact. However, it will, of course, still be necessary to design the corresponding experiments.

5. Discussion

Premack and Woodruff chose to speak in terms of a "theory" of mind, given that the mental states of others are not directly observable but can only be deduced (or inferred) from a variety of clues. However, this idea of "theory" gives rise to some confusion since it does not adequately distinguish between:

1. the ability to *theorize* about other's knowledge or state of mind (i.e. "[…] the ability to *represent* mental states", Baron-Cohen et al. 1985, 43);
2. self-other awareness and the ability to "decentre" oneself in order to adopt another's point of view.

[9] Although the etiology is different and the clinical appearance is not strictly the same, these autistic symptoms resemble some of FM's symptoms. In FM's case, this similarity permits the hypothesis of a unitary somasic disorder.

The "representational" conception of ToM assumes that both the self and the other(s) have already been formed (Beaud 2010, 174). However, clinical studies of human subjects show that these relate to two different and independent abilities. Patients like FM, for example, are neither aphasic nor agnosic. Their deficits do not relate to representation or perception as such. In the case of FM, we hypothesised the presence of an asomasia which resulted in an inability to decentre and achieve self-orientation in either time or space. Similarly, autistic or psychotic children, with reference to whom our colleagues have also hypothesised the presence of an asomasia, are neither aphasic nor agnosic. These observations, which are the result of the clinical study of human cognition, suggest that when considering animal species, we should again not focus exclusively on their ability to *theorise* or *represent* something. The question underlying the experiments and observations concerning "theory of mind" relates less to the ability to "theorise" or "represent" the mental states of others and more to the ability to distinguish between the self and the other (and therefore between one's own knowledge and that of others). In other words, the question is "who is me and who is not me (internal/external, inside/outside, familiar/unfamiliar) in the interaction" (Quentel 1993, 235).

Taking this as our basis, we do not think that there is necessarily anything to be gained by including the question of ToM in a more general theory of empathy as undertaken by Baron-Cohen from the 1990s onwards. To exhibit empathy, it would be necessary: (a) to possess "the ability to attribute mental states to oneself and others"; and (b) to have "an emotional reaction that is appropriate to the other person's mental state" (Baron-Cohen 2005). Compared with the way in which this question was asked in the past, this shifts the emphasis away from representation and towards the emotions. However, this merely shifts the problem. Because, if it is one thing to be able to feel emotions, then it is another to distinguish between the self and the other and to be able to *situate* these emotions either in oneself or in the other. Here again, the clinical study of human subjects makes it possible to dissociate the two processes: the disorders with reference to which we hypothesise the presence of an asomasia should not be confused with abulias, with frontal lesions that give rise to impulsive behaviours [10] or with pain asymbolia, that is, conditions which relate directly to affects, emotions and impulses.

The hypothesis of an ability of somasia makes it possible to go beyond these confusions. According to this hypothesis, somasia is the process (automatic and non-reflexive) that gives the subject (human as well as

[10] See, for example, the famous case of Phineas Gage (Damasio 1994).

animal) permanence and allows him/her to orient himself/herself in time, space and the environment. By differentiating between and delimiting the self from the environment, it simultaneously prevents the subject from confusing himself/herself with this environment, and instead allows him or her to distance himself/herself from it or "decentre" himself/herself mentally based on the "point of view" that somasia makes possible. In combination with specifically perceptual or emotional abilities, it is somasia that makes it possible to attribute *to others* the knowledge or emotions that one experiences *oneself* and thus clears the path toward a "theory of mind", empathy and altruism [11].

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[11] Here, we agree with Decety and Jackson who consider that "multiple dissociable systems [are] involved in the experience of empathy" (Decety and Jackson 2004, 93), with one of these, which interacts with the emotional system, being the system that permits "self-other awareness".

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