

### Original Article

## We Recognize Ourselves as Being Similar to Others: Implications of the “Social Brain Hypothesis” for the Biological Evolution of the Intuition of Freedom

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**Abstract:** Consistent with and in extension of the “social brain hypothesis,” I discuss the idea that the intuition of free will emerged during the course of primate social evolution. If, as the “social brain hypothesis” alleges, the main selective pressure among primates is on generating social knowledge about one’s cooperators and competitors, then it is the knowledge about others and not the knowledge about oneself that is the scarce cognitive resource. It is beneficial to make the others predictable and to form hypotheses about their probable behavioral tendencies. This is done by behavior reading and mind reading and by classifying the recurring stochastic patterns in everyday language as the “will.” Thus, the idea of free will emerged first as a social attribution and not as an introspectively gained insight. The fact that ego applies the idea of freedom also to itself and considers itself to be as free as it considers the social partners to be free, i.e. unpredictable, is in this view a non-selected by-product of social intelligence.

**Keywords:** Free will, mind reading, mirror neurons, social brain hypothesis, primate social evolution

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### Introduction

The human psyche, with its ability to feel, think, and act, is a deterministic system. In the current discussion, this thesis is primarily supported by arguments informed by neurobiology. In addition, the theory of biological evolution also speaks in favor of this point of view, because the human psyche, like every other organismic feature, has emerged from Darwinian selection processes and is, therefore, automatically fraught with the implications of this process. This includes its consistently teleonomic functionality: Biological programs generate and process information according to natural laws and on average produce adaptive solutions to adaptive problems. According to current scientific understanding, however, evolution is a never-interrupted and potentially never-ending replication of genetic programs. We humans, like all other organisms, are ultimately only short-lived vehicles which the genes have created to effect their own replication in the best way possible in an ecologically hostile and socially competitive struggle for life. The sole

purpose of these programs is their own preservation, and the phenotypes, which are designed by these programs in complicated, more or less plastic development processes, are unconditionally subject to this purpose. Evolution is not concerned with progress or goals, or the welfare of the co-players on the stage of life, or the species, not even the individuals, but only with the successful spread of the programs. Contrary to other claims: Freedom does not evolve, and what is more: Freedom could not evolve, because if we assume that organisms which could make use of the freedom to not obey the biological imperative were created by a whim of nature, then natural selection would disfavor these genotypes to the degree that they were to make use of this freedom, and the endless game of evolution would proceed without them. Freedom here is understood in the sense of the indeterministic libertarian intuition of being able to behave in other ways, if one only wanted to do so.

To prevent a widespread misunderstanding: The antithesis of determination is indetermination and not flexibility. Humans, perhaps like no other species, are capable of special behavioral flexibility, which in turn is carried by special cognitive abilities designed for this purpose. This allows humans, more than other organisms, to adequately deal with situations that are new to them and to cope with unusual requirements (Kanazawa, 2004). This changes nothing, however, with regard to the fact that all of the knowledge of how requirements are to be mastered already must exist in the form of certain strategies of perception and thinking in the organism, completely within the meaning of Kant's *a priori* (Heschl, 2001). There is no room in this system for a libertarian freedom of the will, i. e. the capacity to act differently under identical conditions and to cause behavior while oneself being uncaused.

Nevertheless, there are intuitions of freedom. Even though ontologically determined, humans perceive themselves as more or less autonomous decision-makers and see the ego or the self as the causal originator of their own behavior. The psychology of this intuition of autonomy and freedom is understood quite well. As developed by Wegner and Wheatley (1999), the conscious thought of wanting something is seen as the cause of a behavior if this thought correlates in time and in a logically consistent way with the behavior and if competing attributions of the causes are implausible. A causal correlation is concluded from the mere correlation of intention and behavior. We ascribe a mental cause to our behavior in that we have intentions and formulate them as wishes. According to our self-perception, all of this determines, explains, and ultimately justifies our behavior. Whether there are any phenomena of mental causation is doubtful, however, because neurobiological research by no means rules out the thesis of epiphenomenalism, according to which mental states do not produce, but merely accompany behavior and comment on life, without playing any causal role in the steering of behavior. This self-comment makes use of the intentional language of folk psychology and thus suggests a causal relationship between the intention and the behavior. In fact, the production of behavior is a deterministic process and the "intention" is only the descriptive commentary. Accordingly, the reasons for behavior would be confabulated, whereas the valid, non-mental causes of behavior remain hidden. Philosophies of mind also do not rule out epiphenomenalism. In particular, the theory of supervenience, which can naturalistically explain mental states in an attractive way, as Schumacher (2006) has shown, leads to epiphenomenalism. Even if it is conceded that the issue of mental causation cannot be regarded as solved, this essay is

inspired by the assumption of epiphenomenalism and negates a causal role of the will in the production of behavior.

Scientifically informed models of the mind are difficult to accept, however, and this is probably due to the fact that humans, as naïve realists, intuitively tend to be both stubborn libertarians and convinced dualists (Goschke and Walter, 2005). Nevertheless, the brain is mistaken about itself – especially with regard to the presumed mind-brain distinction, and the freedom which is alleged to accrue from this distinction. It is unclear whether this “illusion” is to be understood as a deficit, as an expression of cognitive failure in view of the factual complexity of the brain and its functioning, i.e. because ontological determination cannot be coped with epistemically (Kanitscheider, 2006; Planck, 1937/1975), or whether the illusion of freedom is open to an evolutionary explanation. Can the mind not know how it functions or does it not need to understand this?

*The mind cannot know how it functions*

In favor of this argument is the thesis defended primarily by philosophers of mind, namely that information-processing systems are incapable of understanding themselves, because this would presuppose a non-realizable identity of *explanans* and *explanandum*. Due to this constraint, i.e. due to autoepistemic limitation, the brain can only experience mental states, not neuronal activities. The fact that the brain has evolved to cope with low-complex linear phenomena of the living world but not to cope with highly complex, non-linear, self-organizing dynamic systems (Riedl, 2000) leads to the failure of the brain of itself (Northoff, 2003), because it is itself a highly-complex, non-linear and self-organizing dynamic system. In this case, the intuition of freedom would be a kind of mental veil, behind which inexplicable neuronal complexity is hidden (Roth, 2005; Singer, 2005). From this standpoint, the intuition of freedom would be biologically non-functional, and only an epiphenomenon to a feature of the living world, namely the complex functioning of the brain. If there are no evolutionary drawbacks associated with the intuition of freedom, we would then be dealing with a phenomenon that is “overlooked” by the Darwinian selection processes. Evolutionary biologists may not be satisfied with this interpretation. Although it might be true that the biological evolution of the capacity of self-knowledge is unable to overcome the autoepistemic limitation - for whatever reasons that are not understood – but the reaction to this, namely of declaring that the intuition of freedom is not in need of further explanation, appears *a priori* to be less than satisfactory. The alternative point of view would be a functional one. Accordingly, one could surmise that illusions could fulfill adaptive purposes. But what is the purpose of self-commentary if it does not lead to the production of behavior – if things would work even without such self-commentary?

*The mind doesn't need to know how it functions*

One possible answer to this question focuses on an essential function that is met by self-commentaries. They make behavior more or less predictable. The prediction of a behavior follows from the attribution of an intention. Tetens (2004) sees the advantage of predictability as being in the fact that a third party can rely, to a considerable degree, on what a person says about himself. Tetens' considerations culminate in the following thesis: “Human behavior and actions are accompanied by the self-commentary of the actors in the language of folk psychology. This self-commentary proves to be true to an amazing degree

when predicting the behavior of a person, namely to a degree that makes human co-existence and human culture possible at all” (p. 181, author’s translation).

However, this idea requires a more precise analysis, because evolutionary theories of behavior do not provide for the fact that natural selection is completely working towards the unconditional predictability of the actors in a social group. On the contrary: Social intelligence has a lot to do with the concealment of the “true motives” of behavior (Byrne and Whiten 1988). The question is now: If the benefit of self-commentary lies in an improvement of the ability to predict behavior, how can this be reconstructed from an evolutionary point of view and which sociobiological theories are there to explain self-commentary with a reference to adaptive advantages?

*“Behavior reading” and “mind reading” as the adaptive response to social complexity*

One possible answer might be: Self-commentary is an evolutionary byproduct of the ability to comment “live” on the behavior of others. To understand this, a brief recourse to an evolutionary model is needed, which most plausibly explains the evolution of mental competencies, such as autobiographical memory, self-awareness, and an ego-identity, intentionality, theory of mind and empathy, in short, the whole range of developed forms of social cognition, namely the so-called “social brain hypothesis” (e.g., Barrett and Henzi, 2005; Dunbar, 1998; Kummer, Daston, Gigerenzer, and Silk, 1997). Its ambition consists of seeking the evolutionary selection pressure for the increase in brain volume in the social evolution of primates and, thus, as a consequence, the increase of that which is colloquially described as intelligence, including its differentiation into symbolic language and culture, in the increasing social complexity of primate societies and the requirements which this places on successful life in social groups.

For reasons related to the improved avoidance of predators and a more efficient defense of resources, increasingly cooperative behavioral strategies have developed and spread in the evolution of primates to solve the adaptive problems of self-preservation and reproduction. Although it may be true that the social complexity of primates pays off in gains in cooperation, not every member of the group benefits equally. Social competition within the group is the evolutionary consequence of this trend and thus comprises a complicated and differentiated situation that is presumably unique to vertebrates: Within one and the same social group, even within one and the same relationship dyad, cooperative and competitive strategies can be applied simultaneously. It is no accident that Byrne and Whiten (1988), who were the first to devote substantial attention to the “social brain hypothesis,” gave their book the title of “Machiavellian Intelligence”. Thus the authors locate the evolutionary engine of human intelligence in the simultaneousness of self-interested cooperation and competition. The evolutionary origin of all those social strategies which characterize the societies of primates, including humans, such as tactical deceptions, the social utilization and exploitation of relationships, political alliances, and coalitions and their opportunistic changes, lasting friendships and hostilities, rebellion and reconciliation, are placed between cooperation and competition in the ambivalent nature of primate societies. The intelligence of primates is social intelligence according to its origin, and not, as one might suppose in view of Köhler’s famous experiments with chimpanzees, primarily technical intelligence.

Social intelligence, which can be understood as the capacity to use knowledge about others including about their mental states, to predict the behavior of these others and to

influence such behavior in one's own interest, has a crucial impact on the lifetime reproductive success of the actors. This means that the evolution of cognition and intelligence targeted the prediction of the intentions and behavioral tendencies of others. Not primarily self-knowledge, but the understanding of others was and is favored by natural selection.

It is unclear when the ability to read minds arose in the evolution of primates. With the exception of the great apes, non-human primates do not appear to have this ability. Although they have states of awareness, they do not know this (Cheney and Seyfarth, 1990). Their social intelligence is based on behavior reading and not on mind reading (Barrett and Henzi, 2005). Instead of mental concepts, inductive generalizations are applied: For example, one will assume that another will behave tomorrow as he did today. This type of stochastic prediction does not require a theory of mind or mental stimulation, but only an intuitive theory of probability (Barrett and Henzi, 2005).

Even apes including humans have the non-mentalistic folk psychology just outlined, and in many, presumably the majority of social transactions, the cognitively less sophisticated behavior reading plays a much more significant role than the cognitively more sophisticated mind-reading. The ability to read minds is an evolutionarily more recent phenomenon. Primatologists and evolutionary psychologists who are tracking the phylogenetic and the ontogenetic roots of the theory of mind, argue about whether these roots are to be found on the level of all of the great apes or whether they do exclusively belong to *Homo sapiens* (Tomasello, Carpenter, Call, Behne, and Moll, 2005). In connection with the argumentation of this essay, this issue does not play a key role. What is important is that primates are able to predict and influence the behavior of others, through whatever cognitive competencies this social intelligence might work.

Social intelligence presupposes, however, a somehow generated and represented understanding of behavioral tendencies and their consequences. To a certain degree, this requires internalization of the behavioral tendencies of others, so that predictability and ultimately the ability to understand can occur, and it looks like the mirror neuron system fulfills this function. A neuronal network that does both, namely represents both the observation and the implementation of goal-oriented behavior is part of the mirror neuron system. The same neuronal processes are endogenously activated when performing an action and also exogenously activated when observing an act performed by third parties. Psychologically speaking, mirror neurons fulfill two essential functions, on the one hand, the ability to imitate, and on the other, what is referred to as "action understanding" (Rizzolatti, Craighero, and Fadiga, 2002).

Mirror neurons enable the description of observed and self-performed actions in one and the same concept, and this obviously not only applies to motoric courses of action, i.e., behavior reading, but also to perception and emotion, i.e., to the essential prerequisites of emotional empathy (Gallese, Keysers, Rizzolatti, 2004). Even for cognitive empathy, i.e. for metarepresentations or the theory of mind, that is when reading minds, mirror neurons obviously play a significant role, because the understanding of actions also implies the understanding of the goals of actions, and consequently, the intentions of the actors (Decety and Chaminade, 2003; Gallese, 2003, 2005; Iacoboni et al., 2005). It looks like the mirror neuron system provides the mechanism that makes social intelligence, namely, both the behavior reading and the mind reading possible, and it might also have evolved for this

purpose. Therefore, cognitive neuroscience is also social science to a not insignificant degree (Blakemore, Winston, and Frith, 2004).

*Social intelligence as a cognitive transfer benefit: The “egocentric point of view”*

The mirror neuron system is suggestive with regard to an obvious but, as I will argue, nevertheless doubtful, conclusion. The idea that is repeatedly nursed is that humans use the knowledge about themselves to interpret the acts of others. Allegedly one knows one’s self best and projects this knowledge onto others, to achieve a reliable understanding of others that is suitable for everyday purposes. “Thus, if one accepts the notion that the acting individual ‘knows’ what will be the result of his/her action, one has to admit also that he/she will be able to know the outcome of the observed action, this being the same mechanism involved in both occasions,” as it says, for example, in Rizzolatti et al. (2002, p. 51) with reference to the mirror neurons, and by Gallese (2003, pp. 517): “We can recognize others as similar to us,” and our heuristics is a “like me” analogy (Gallese 2003, pp. 517). Frith and Frith (1999, p.1694) conclude, in their review of the biological basis of “mentalizing”, i.e. the ability to understand and manipulate other people’s behavior in terms of their mental states: “... that the analysis of another agent’s behavior in conjunction with the representation of our own mental states allows us to make inferences about the intentions of that agent.”

*Self-knowledge and self-awareness as cognitive transfer benefits: The “alterocentric point of view”*

The assumption that we can recognize others as similar to us, which is to be termed “egocentric,” does not do justice to the implications of the social brain thesis. If I may be permitted to make a pun, this requires an “alterocentric” point of view, because as indicated in the foregoing, selective pressure bears down on understanding others, but not on understanding oneself. Understanding others functions as the ability to cope with social contingencies, but not understanding oneself. Of what evolutionary benefit would it be for a deterministic, neuronally regulated system to recognize itself, while developing hypotheses about itself, so to speak? I do not see any advantage, because this system is already in possession of the knowledge about itself. How this knowledge is represented and stored in the system and how it takes effect is interesting from a scientific point of view and may continue to engage generations of neurobiologists, but it is irrelevant for the evolutionary success of this system. Organisms master the perils of life with the aid of the deterministic mechanisms designed by natural selection without this being associated with the generation of self-knowledge. All species on this planet prove this – with the exception of at least one, namely our own. If, as the “social brain hypothesis” alleges, the main selective pressure among primates lies on generating social knowledge about one’s cooperators and competitors and utilizing this knowledge for one’s own production of strategic behavior, then it is the knowledge about others and not the knowledge about oneself that is the scarce resource, the maximization of which is promoted by natural selection. From an evolutionary standpoint, it is advantageous to make the others calculable, i.e., to form hypotheses about their probable behavioral forms and tendencies. Calculability is a basic prerequisite for correctly assessing the risks that come from others, and also for being able to recognizing the opportunities resulting from a Machiavellian manipulation of others or from cooperation with others. In short: One of the most pressing

adaptive problems in social evolution comprises the generation of reliable social knowledge about others.

The solution to this problem consists of classifying the behavioral tendencies of others in recurring stochastic patterns and documenting these patterns with a concept that is intentionally formulated in everyday language as the “will” or the “desire.” If one can recognize what someone will probably do through behavior reading or mind reading, one describes this prediction as the will. And vice-versa: Behind the statement that someone wants this or that lies a prediction obtained through behavior reading or mind reading. By transferring the original incalculability of the social partners into consistent patterns of interpretation, they become calculable figures and they become more or less transparent.

From an evolutionary standpoint, the idea that someone has a free will occurs against the background of a range of behavioral opportunities that is inexplicable in principle, and at the same time, constrains this inexplicability to probable sequences of behavior. The original freedom, i.e., the incalculability of the actors is restricted by what ego conceptualizes as will. The will itself can intuitively only be freely thought of, because it brings order to the inexplicable range of possible behaviors without being recognizably self-determined. From an evolutionary standpoint, the idea of the free will emerged first as a social attribution and not as an introspectively gained insight, and only in the social attribution does an evolutionary function probably lie.

This interpretation also fits the rhetoric of intentionality, with which non-human behavior is described (“The dog wants to bite me”). Possibly, animism also finds its evolutionary origin by making the incalculability of inanimate processes cognitively controllable through the attribution of a will (“What does the computer want from me?”). And this in turn could belong to the evolutionary roots of religiosity, because religions obviously can not make do without imputing a (free) will to the respectively designed deities (Soeling and Volland, 2002). What is crucial for the current argument is that natural selection has produced cognitive mechanisms for making the epistemic indeterminacy of the behavior of the social actors calculable. Strategic (“Machiavellian,” “selfish gene”) benefits can be drawn from this calculability, as ego can beneficially adapt its behavioral tendencies to the probable behavioral tendencies of others.

During the evolution of the cognitive apparatus and its algorithms, there is iterated feedback in terms of a higher-order theory of mind. By this is meant that for ego, not only is it relevant to predict the probable behavior of others, but also to design a hypothesis that is as accurate as possible, as to how the others probably think about oneself. This in turn will influence one’s own behavior and, thus, drives an evolutionary arms race of cognitive competencies of social intelligence, because it is no doubt useful, as Vaas (2003, p. 817, author’s translation) points out, to “ascribe volitions to oneself, because otherwise one can not think about the mental states of others that relate to oneself.” Paradoxically, this means, that I do not allow myself to be influenced by my own will, but instead by the will of others.

This interpretation leads to an assessment of the adaptive function of the mirror neuron system, that has been rotated 180 degrees in comparison with conventional possibilities (see above: the egocentric point of view). The conclusion reads: I interpret myself just as I interpret others. The “We can recognize others as similar to us” is reversed into “We can recognize ourselves as similar to others.” Epistemic indeterminacy, incalculability, in short, the “free will” of others, i.e., the actual adaptive problem to the

solution of which the mirror neurons contribute, leads to the self-attribution of freedom. One perceives oneself as being free, because one assesses the behavior of the others as being initially incalculable, and as a consequence of this, one also sees oneself as being initially incalculable and in this sense as being free. One understands oneself as also being driven by the will, i.e., predictable, because the mechanisms of behavior reading and mind reading also make one's own behavior predictable in an act of self-application, without being evolved for this purpose, and without the will having to assume the role of a causal agent. This idea can easily be applied to the origin of self-awareness. Accordingly, self-awareness would have to be assessed as the result of a cognitive transfer benefit, and thus as a consequence of social intelligence and not, as could be assumed, its evolutionary prerequisite.

Experts describe the capacity of children of understanding other persons as intentional agents as the first specifically human development task on the long road to the development of specifically human cognition (Tomasello et al., 2005). This stage of development, which is completed during the second six months of life on average, precedes the development of metarepresentations, which occurs during the fifth year of life on average, i.e., the ability to adopt a reflexive standpoint about one's self and one's world view. To this extent, persons learn to distinguish self from others and self-awareness and the intuition of freedom can thus be grasped as social institution (Prinz, 2004; Singer, 2000). However, these learning processes have to be interpreted from an evolutionary point of view and not necessarily within the meaning of a complicated, more or less language-bound learning associated with early childhood in discourses on social attribution, as proposed by Tetens (2004) or Prinz (2004). Persons have evolved the ability to interpret the behavior of others, and the cognitive instruments which have evolved for this purpose, have a reverse impact – as a by-product – on the persons themselves. Viewed in this way, free will is a social institution, but one with an evolutionary past. Therefore, the I-perspective is not, as Tetens concludes, the “internalized and imagined imitation of the comments of others about us, and our own behavior” (2004, p.183, author's translation), but the I-perspective is the side-effect of our comments about the others and their behavior. In this sense, the formula used by Prinz, namely that the actor “constitutes himself in the mirror of the others and ultimately understands himself to be how the others understand him” (2004, p.203, author's translation), would have to be restated to read: The actor constitutes himself in the mirror of the others and ultimately understands himself to be how he understands the others. The actor, the person who undertakes the attributions to the others and to himself, is – so to speak - the mirror himself. From an evolutionary standpoint, self-commentary is social commentary first of all, and only secondarily will it provide information about oneself within the meaning of a self-ascertainment.

## **Conclusion**

The evolutionary perspective helps to find an answer to the question indicated in the foregoing of what the function of the intuition of free will is. This question stubbornly reappears in the discussion about free will, and it is one of the most difficult questions within a naturalistic perspective of the philosophy of mind. If the will does not determine behavior, but only comments on such behaviors epiphenomenally, then the intuitions of freedom do not appear to have an adaptive function. So why do they exist? An evolutionary



answer to this question will not be able to start with the modern functions of the idea of free will in modern society. Morals, laws, and politics would have to be cited here, all of which would not even be conceivable without the jargon of freedom (Prinz 2004). Instead, an evolutionary answer would have to refer to past functions that recurred in past environments of evolutionary adaptedness from which morals, laws, and politics could arise in a long period of evolutionary history. As discussed above, the increase in social intelligence of self-interested actors in complex societies appears to have been the evolutionary driving force for the intuition of freedom. Seen in this way, the modern outflows of the intuition of freedom into morals, laws, and politics are complex consequences of this intuition of freedom, but not its original *raison d'être*.

**Acknowledgements:** The work on this essay was supported by a fellowship at the Hanse-Wissenschafts-Kolleg (Delmenhorst, Germany). Rector Gerhard Roth and his team are cordially thanked for their pleasant hospitality and support. I also thank my co-fellows, in particular Ralph Schumacher, for helpful comments on an earlier version of this essay, even if not all of their ideas have been incorporated in the argumentation. And finally, my thanks go to Athanasios Chasiotis for a “dumb,” but stimulating question.

**Received 26 November 2006; Revision submitted 7 June 2007; Accepted 14 June 2007**

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