

# Studying the cognitive states of animals: Epistemology, ethology and ethics

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**Abstract.** The question of cognitive endowment in animals has been fiercely debated in the scientific community during the last couple of decades (for example, in cognitive ethology and behaviourism), and indeed, all throughout the long history of natural philosophy (from Plato and Aristotle, via Descartes, to Darwin). The scientific quest for an empirical, evolutionary account of the development and emergence of cognition has met with many philosophical objections, blind alleys and epistemological quandaries. I will argue that we are dealing with conflicting philosophical world views as well as conflicting empirical paradigms of research. After looking at some examples from the relevant literature of animal studies to elucidate the nature of the conflicts that arise, I propose, in strict Darwinian orthodoxy, that cognitive endowments in nature are subject to the sort of continuum and gradation that natural selection of fit variant forms tends to generate. Somewhere between the myth of “free” humans and the myth of “behaviourally conditioned” animals lies the reality of animal behaviour and cognition. In the end, I hope to have softened up some of those deep-seated philosophical problems (and many quasi-problems) that puzzle and dazzle laymen, scientists and philosophers alike in their quest for knowledge about the natural world.

## 1. Introduction: Mental states in biology and cognitivism

Marc Bekoff, as a proponent of cognitive ethology — which he defines as “the evolutionary and comparative study of nonhuman animal (hereafter animal) thought processes, consciousness, beliefs, or rationality” (Bekoff 1995<sup>1</sup>) — has to take a defensive stand and justify (even excuse) his “cognitive” approach to animal studies; and indeed, the bulk of the essay quoted above is dedicated to answering the critics of the cognitive approach. It is surely a sign of the fragility of the field when Bekoff is emboldened (in the same essay quoted above) to use the term “slayers” to designate the fierce attitude of the harshest critics of cognitive ethology.

Some people really *are* out to attack the whole field (of what I call zoo-cognitivism), on philosophical as well as scientific grounds. There are numerous variations of this anti-zoo-cognitivist critique, out of which we shall explore not a few. One major, recurring argument states that “[m]ental events are private phenomena” (G. C. Williams, quoted in Bekoff 1995) and consequently unreachable by science. This idea underlies not only Williams’s argument against the special claims of zoo-cognitivism, but also the more generalizable public opinion concerning man’s place in nature. We can go back to Plato, Descartes and Kant, and to any number of thinkers throughout the ages to find corroboration to this belief. My point of departure is strictly that of a scientist, and specifically of a Darwinist. We must not attack cognitive ethology from the point of view of orthodox Darwinism, as somehow “deviant”, when Darwin himself, in a famous passage in *The Descent of Man*, said that “the difference in mind between man and the higher animals, great as it is, certainly is one of degree and not of kind” (Darwin 1871: 105). More up-to-date support for mentalist theories of animals can be found in Uexküll’s concepts of “Umwelt” and

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<sup>1</sup> Unpaged online edition is used; hence no page numbers are shown.

“Innenwelt”, which are indispensable tools for zoosemiotics as it has developed since the early days of last century. Nonetheless, we shall focus more on dysfunctional theories of ancient origin such that predate semiotics, and that is why we will not explore Uexküllian semiotics further in this essay. Instead, we will focus on some epistemological quandaries around which debate gets framed, “stuck”. That is why actual semiotics does not get a special place in our analysis. Mind, I think, has to be understood first — or rather, revealed as a poorly understood and defined concept. We *think* we know what we mean by it, but do we? This and a few other Cartesian fallacies shall be expunged in the course of this essay.

In the conclusion to his essay, Bekoff (1995) gives a few reasons for taking the potential of the field of cognitive ethology seriously. The following is, for me, the most convincing:

It may be more economical or parsimonious to assume that not everything that an individual needs to be able to do in all situations in which he finds himself is preprogrammed. While general rules of thumb may be laid down genetically during evolution, specific rules of conduct that account for all possible contingencies are too numerous to be hard-wired (Griffin 1984). Behavioristic learning schemes can account for some flexibility in organisms, but learning at high degrees of abstraction from sensory stimulation seems less amenable to behavioristic analysis (Allen and Hauser 1991).

I am basically in agreement with Bekoff’s claims above. However, we shall see that there are a number of serious philosophical (most notably epistemological) problems and blind alleys that need to be avoided or, better yet, cleared and superceded. In search of a cognitive evolutionary basis for animal communication as the precursor to our own, we encounter a few serious challenges which I hope to expose as serious, persistent and — ultimately — non-scientific and thus irresolvable. John Dupré has also pointed out, arguing against certain “Cartesian assumptions” (Dupré 1990: 429), that when we ask “whether animals other than ourselves have minds [...] the problem is

paradigmatically philosophical” (Dupré 1990: 428), and not an empirical question. Indeed, no amount of “evidence” can settle our different world views or unhinge our philosophical comfort zones.

By analyzing the conflict of world views at play in the field of animal behaviour studies, we come to a better understanding of the sort of conundrums that keep science from being the sort of “objective” field of pure research that it often, and justifiably so, strives to be. Rather than seeing this as undermining knowledge, we can see this as constituting the possibility of continuous revolutionary overhaul of the working assumptions of scientific research. The presence of (resolvable) conflict and (intellectually stimulating) feverish debate is the *sine qua non* for a healthy society of peers. At any given moment, to use Kuhn’s terminology, a shift in paradigms may enliven the moribund body and reshuffle the deck. This, I argue, is what we face in the meeting-point between cognitive ethology and latter-day behaviourism today, in the form of various philosophical objections and assumptions that have come up as the debate has raged and stalled. We are at a crossroads, where the direction and orientation of future projects hangs on a balance. These are the times when our “faith” (in our world view) is put into test.

At this point let there be no doubt that I propose a radicalization of *empiricism* against non-cognitive behaviourism, in as much as this old *Forschungsmethode* has, thus far, entailed a rejection of any and every biological *Innenwelten* and denied the presence of “internal freedom” in the brain-mind-world semiotic loop of animals. Although this *does* put into question the strictly narrow definition of anti-cognitive materialism as an ideology suitable for explaining animal behaviour, it does not mean rejecting physicalism in biology. The *continuity hypothesis of evolutionary history* (as postulated by Darwin) can be maintained without taking any one, single unifying scheme (like the trigger-response mechanism of behaviourism) as the preferred, plenipotentiary explanatory model. My new approach of “behavioural cognitivism” (or “cognitive behaviouralism”) aims to supersede

dualistic research programmes in consciousness studies and to reject (avoidable) anthropocentric biases in the study of the biosphere. Evolution, I believe, is *hardwired* to produce “freedom” (that is, *internal responsiveness*) in the process of fostering adaptability, variation and change — even if humans are the only ones who have come up with the term “freedom” to define their experience of the world and even if humans are unusually (because of our brain powers) self-conscious of having liberal cognitive capacities. We need to remember that most human societies throughout history have not even had a concept for what we call “freedom”; some three or four thousand years ago, or even as late as the European middle ages, people didn’t believe they were “free” in the modern sense. The myth of progress has given us the myth of freedom as its corollary. Freedom, in the current sense, is a secular interpretation of our Abrahamic-Hellenic intellectual tradition. Descartes, after all, produced his “*cogito*” as a result of doubting, and then affirming, his Christian faith. At any rate, the scientific and psychological understanding of man as a creative, information processing psyche has served to separate us from the natural order and given us *de jure* superiority of the sort that, *de facto*, we have claimed all along.

I believe that the last — or, anyway, the latest — “Copernican” cognitive revolution will entail questioning the rigid assumption that *we are self-evidently conscious* (in a way that, say, primates or rabbits are not) and *correct* in assuming that we are transparent to ourselves. We also must question its corollary, namely the belief that animals and such “other minds” are *non-transparent* to us, non-available to our gaze (beyond our science and senses). In a word, we must question the introspective perspective of the “I” (as a source of *immediate* and *unique* knowledge) as it functions in the knowledge construction and scientific studies of animal behaviour. We will have to either liberate consciousness and freedom as attributes of nature as such and to see them in that light, or else to deny the validity of such concepts altogether, and to reduce mankind further down to materiality. The

latter alternative, unless it coincides with the first, is probably a wrong-headed move (since behaviourism already tried it), so I believe the choice now is between increased *bio-equality*, on the one hand, and the persistence of an old myth of *human uniqueness*, on the other hand. The myth we are operating under is the idea that mankind has a “special something” (the perspective of perfect self-understanding as minds) that gives it — “us” — a private, exclusive “window” (to use Jane Goodall’s metaphor in the book *Through a Window*; Goodall 1990: *passim*) into our own soul. This illusion is the equation of *soul, or mind, with language* (as a gift of transparency). This perspective, for convenience’s sake, we might call Cartesian rationalism. The relevant philosophical critiques of this perspective, from a general point of view, can be found in the works of John Searle, Ludwig Wittgenstein, Charles S. Peirce, Martin Heidegger and Jacques Derrida, among others. We don’t need to go into that direction here. Instead, we shall focus on the more particular and local problem of “other minds” in biology, ethology and primatology.

We need to answer why, for people like Marc Bekoff and Jane Goodall, it continues to be difficult to convince other people about their strongly held convictions that animals, indeed, have minds. Goodall, for example, writes that in graduate school, “although I continued to hold to most of my convictions — that animals had personalities; that they could feel happy or sad or fearful; that they could feel pain; that they could strive towards planned goals and achieve greater success if they were highly motivated — I soon realized that these *personal convictions were, indeed, difficult to prove*” (Goodall 1990: 16; my italics). In the absence of proof, Bekoff called his book *Minding Animals*, and Goodall hers, reflecting her point of view as an observer, *Through a Window*. They are both attempts to look, through the human window, into the mind of the animal. Instead of entering their discourse, which is oftentimes poetic and always suggestive but sometimes very subjective (for example: “As I stood quietly in the pale sunshine [...] I saw for a brief moment through another window and

with another vision” [Goodall 1990: 9]), I will look at ways in which science and epistemology have *failed* us in this quest, and why we are dealing with a conflict of *world views* irresolvable — it seems, at least to Goodall and Bekoff — by reason and science. After all, Goodall emphasizes the value of “peace ‘which passeth all understanding’” (Goodall 1990: 10). We need to understand why she takes for granted that “we cannot know with the mind of a chimpanzee” (Goodall 1990: 11), at least not through the “window” of science and reason. She is constantly in search of “other windows; windows that have been unshuttered by the logic of philosophers; windows through which the mystics seek their visions of the truth” (Goodall 1990: 10). So, I am looking for the reasons as to why the debate hangs on the balance between two different windows and two different interpretations of the world. Why is the empirical data, in itself, not sufficient to prove that animals have minds?

In the process, we need to de-philosophize and de-mystify several key concepts involved here: freedom, consciousness, mind, behaviour, species, etc...

The analysis, then, becomes a study of *rhetoric* (and the use of language) as well as of behavioural *evidence* (and the use of this evidence as data).

Next, let us undertake a short discussion on “anthropomorphism” (chapter 2), after which we shall look at some epistemological dead ends that ethological practice inevitably runs into (chapter 3). Then, with the aim of clarifying our speech and problematizing the selfishness associated with it, we explore the role of *language* in our definition of humanness (chapter 4). Finally, I hope to present (in chapters 5 and 6) an ethological outlook — a monistic world view — based on the unity of behaviourism and cognitivism in zoology, focusing on the possibility of a radically non-dualistic evolutionary approach to cognitive-behavioural studies. By the end (chapter 7), I hope to have gained deeper insight into some old philosophical problems of our long, proud, human tradition, in light of the

conflicting world views and epistemological quandaries explored thus far.

Do we wish to move beyond the dualism of *behaviour* vs. *cognition*? How can we? Can we understand freedom *as* something that is hardwired in our genes? Physicalist evolutionary theory emphasizing the *continuum hypothesis* of nature, enriched with some semiotic insights, in my mind, is crucial in solving this riddle of the sphinx.

## **2. Preliminary reflections on the topic of anthropomorphism**

There was a slight movement from Fifi's nest and I saw that she had turned and was looking down at me. What was she thinking? How much of the past did she remember? (Jane Goodall 1990: 7)

It has been said that we are unavoidably anthropo-*centric*, and perhaps equally unavoidably anthropo-*morphic*, in our dealings with animals. Anthropomorphism, or “ascrib[ing] human emotions to non-human animals” (Goodall 1990: 16), has been called the “cardinal sin of ethology” (Goodall 1990: 16) and, facetiously, “the A-Word” (Griffin 1990: *xiii*). The “A-word” is “often used as an all-purpose expression of disapproval”; it is, anthropologically speaking, “the name of a taboo” (Griffin 1990: 4). John Andrew Fisher, in his analysis of the phenomenon, *The Myth of Anthropomorphism*, blames this kind of thinking on the “Cartesian heritage [...] that attributed to humans (that is, mental substance) all real mentality and to animals (that is, machines) none” (Fisher 1990: 99). This “Cartesian dogma” (Fisher 1990: 99) is commonly rejected by Darwinists but tacitly assumed by many cognitive scientists and traditional philosophers. Noam Chomsky, Thomas Sebeok and Steven Pinker are some of the repeated offenders here. I believe that this is an unfruitful road of inquiry, and a

real burden that we needlessly carry from the past. This tradition has upheld a double illusion, or a double dogma:

1) We think of ourselves as Beings into whose mystery we have “internal” access, by way of introspection. By extension, unless we are complete solipsists, we think that we have similar access — at least *limited* knowledge, *theoretically* — to the minds of our conspecifics by extrapolating outwards by way of analogy or empathy or imagination. This way of reasoning — by which we claim to know our minds and, by extension, our “shared humanity” — can be called the argument from the primacy of experience (that only humans can *share*). It claims access to a transparent domain of (phenomenological) knowledge. “I know what I’m feeling! I know what I’m thinking! I know what my intentions are!” This is the starting point of what John Andrew Fisher (1990: 113) has called the perspective of the “isolated Cartesian ego”.

2) The second illusion, or dogma, is really just the flip-side of the first point — its negative implication, as it were: it claims that we can *not* know the contents of minds about which we have no “personal knowledge”, that is onto which we have no vista or access. As it happens, most people think that, in a way, we *do* have, or *can* have, immediate knowledge about other people’s minds (according to the non-solipsistic interpretation of the first dogma). But for some reason, claiming to have, or claiming to be able to acquire, immediate knowledge or hypothetical knowledge about the minds of *animals* is seen as a dangerous overstepping of boundaries. But I think this is nonsense. There are no good biological or psychological reasons for thinking that this categorical prohibition is any truer than strict solipsism is. They are both varieties of extreme rationalism in the line of Cartesian doubt, just like any radical skepticism is.

For example: how do we know that you and I have the same experience of the colour “green”? The answer is *not*, ‘because I can extrapolate from my experience to yours’. Instead, the answer is: because ‘*it doesn’t matter* if we have different experiences or not’, we

can still function in society and do science “as if” we were both (equally) conscious, on the *behavioural* level, with the full knowledge that this “cannot be proven” to satisfy the skeptic. Most science operates on this “as if” basis, testing hypotheses to see whether our ways of life and world views cohere and enrich our lives in the long term. The way we treat other human beings operates on the principle of shared “liberal” assumptions about each others’ status and mental abilities. This kind of intuited “knowing” allows for a co-habitation in a shared reality (without ever offering any philosophically interesting “proofs” against hyper-rationalist skeptics). People just live in a shared behavioural space.

Behaviour, here, is the definite clue to consciousness. In fact, behaviour, in most cases, means (stands for) *empirical evidence*: the data that is available to us, as a given. In fact, these two domains (behaviour and empirical data) are co-extensive in average ethological study. They simply mean the same thing. Cognitive ethology, too, in this regard at least, must be a sub-category of behaviourism, a sub-category of empirical data. This conclusion follows if we want to accept the common sense hypothesis which says that all evidence must be collected using our perceptive instruments (including our scientific measuring tools) and cannot bypass reason. This means that behaviour, in most cases, stands as the *sufficient* proof that other people have minds. Babies generally recognize this very early on. Also, if I don’t believe it as an adult, I am liable to be an outcast to the society! Thus, there is a pragmatic, if philosophically “lazy” solution to our epistemological doubts: we operate in our everyday reality *as if* other minds exist out there, and *as long as we do*, there is no problem. Why should mind not emit signs of its presence? Mentality, I think, is something that is proven to be factual through interpretation of behaviour. We believe in minds that we see and encounter; not because I make any wild leaps of faith or assumptions about the “qualities” of their internal states, but because I read other people’s behaviour and, likewise, let my *own* behaviour be affected by human

gaze. As long as we operate “satisfactorily”, we are living in a “world of minds”. In such a world, we can operate *with* other people. By extension (which is perfectly reasonable and intuitive), in the absence of contradictory data we can also see ourselves as operating *with* other animals, in their cognitive presence.

The way Jane Goodall (1990), for example, uses language to persuade the reader is remarkable. Her text is riddled with easily identifiable rhetorical tropes. She uses the word “clearly” a lot (the italics in the following are entirely mine); in one scene, an “infant [...] is *clearly* having a tantrum” (16); in another, an “adult male [...] is *clearly* in a good mood” (17); in yet another, a chimp is “*clearly* feeling cross and grumpy” (17). She sees these things clearly. As an argument, this is likely to fail to persuade some people, and it’s certainly not going to *prove* anything, but it shows that it *is* possible to infer cognition from behaviour to the degree of professed clarity.

I would argue that to give credence to radical cognitive skepticism is to leave the door open for solipsism of the most pernicious kind, one that operates unethically under the banner of objectivity and neutrality. In fact, neutrality (in matters of consciousness) might well be the sort of mechanistic intervention that destroys life wherever it finds it, like the blind doctor who sees not that the patient is dying in his arms. Most people, from most cultures, see the point of view of so-called “anthropomorphic” zoo-cognitive attribution as the natural starting point for understanding animal behaviour. They feel, rightly or wrongly, that this perspective is justified by their life-world. It also comes naturally to most children as soon as they develop moral sentiments. This is because they observe animal behaviour and *see* emotions, intentions and cognitive states. They don’t “extrapolate” or “imagine” these, but they *see* them. They *live* in a world of shared minds, of biotic mutuality of communication. They see themselves as minds-among-minds, and operate accordingly. There is no middle man here, no invisible medium, or film, of interpretation. Sometimes, of course, they are wrong (about their interpretation of perceived

events), but likewise they are sometimes wrong about other humans' current mental states at any given time, *accidentally*, without being *categorically* wrong about humans' cognitive capacities on the whole. This is because seeing does not imply seeing *accurately*. All "seeing" (or semiotic interpretation) implies making flash judgements based on immediate sensory knowledge with some margin of error. Without such *active* interpretation (which is always information-poor but experientially rich), all social co-existence is null and void (and antagonistic). After all, if we had to think real hard whether people in a given situation had minds or not, we would fall by the wayside, away from the sort of respectable and clear position that social mutuality demands. Even upon stronger reflection, this sort of intuition does not seem to be overturned as much as wished away to suit the ideological purposes of a given era and philosophical current. Skepticism (and this was also Peirce's opinion) works best on *paper*.

Now, I cannot claim that skeptical arguments, as such, can be won over by counter-arguments of the sort I have proscribed. In fact, this is precisely my point: radical skepticism cannot be countered in words, only in experience, in data, in *seeing* the behaviour *as* "cognitive". In this new framework, the mind is seen as co-extensive of behavioural evidence. Behaviour shows that animals have minds. Cognitive capacity can be measured scientifically and described ethologically.

Our thinking relies on a long and rich religious, philosophical and psychological tradition. In this tradition, species-centrism has been allowed to flourish to the point where radical skepticism has put our *naturalness* into question. Disembodied rationalism and the alienation of man from nature have walked hand-in-hand from morning to sunset. Today, we need to go *straight to the experience* (as Husserl used to say, although still from a Cartesian perspective), back into the undivided unity of the "cognitive-behavioural observational event" of the natural habitat. Only by observing animals can we see their behaviour as cognitively endowed, as internally motivated.

So, I propose a radical “cognitive behaviourism” which is indebted in spirit to the analytical tradition of Willard van Orman Quine, Ludwig Wittgenstein, Daniel Dennett and Donald Davidson. This kind of interventions seems to me the best remedy against radical rational skepticism of the sort that Descartes, Sebeok and Chomsky have variously proclaimed. The emphasis on *pragmatic* conceptions of the role of evidence in knowledge stretches back to the early British Empiricists, most notably John Locke, David Hume and George Berkeley, but the American Pragmatists provided it with a more “life-world” oriented focus, starting from Peircean ontology, reaching into William James’s psychology and, more recently, the radical anti-epistemology of Richard Rorty (1980). Without going into details of any of these theories, we shall simply lay down the focus in as simple terms as “humanly” possible.

These are my hypotheses:

- 1) The mind does not exist, as such, apart from behavioural data.
- 2) We *can* know other minds simply based on their behaviour<sup>2</sup> (and only in this way).
- 3) Behaviourally, too, we come to “know” (or posit) the minds of other human beings.
- 4) In fact, this is perhaps how we know *our own* mind: by socializing our behaviour.
- 5) The mind does not exist except as an observational hypothesis on behaviour.
- 6) There is no qualitative (observational) difference between language and behaviour.
- 7) There is no qualitative (observational) difference between mind and semiosis.
- 8) Consequently, pragmatically speaking, *semiosis = language = behaviour = mind*.

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<sup>2</sup> Behaviour is here defined rather loosely, heuristically, as the sum total of observable evidence.

9) This unity is functional, evolutionary unity, in a monistic world.

It should be noted that none of these concepts — or their conceptual unity — is meant to be taken essentialistically, or to imply any kind of metaphysical substance. Any organism's "mind-behaviour" (its ontology) is subject to the infinite continuum and variety of nature's phylogeny. In other words, behavioural and mental emergence of forms is infinitely complex. Evolution can be messy business. What we can look for is continuity and connections.

Building towards a radically Darwinian view of the world, we have established a working unity between many of the concepts that have so far been studiously kept apart. Rather than *proving* this unity, I simply take it for granted, and build on that working assumption. By not proving it, I am subjecting it to the test of experience and time, ready to be disproven or proven. In other words, I'm postulating a hypothesis. We are testing waters here, heading for uncharted territories. Who knows whether we'll land in India or America — but even fundamental misdirection, as the example of Columbus' journey shows, can yield a reward. The fundamental reason for taking such an approach, however, is not an epistemological but an ethical one: We cannot always "prove" our moral intuitions, but we can still live by them. Furthermore, I claim that we can *never* prove the superiority of one world view over another (see Feyerabend 1975; Kuhn 1964; Rorty 1980), we can only *show* (as Wittgenstein put it) the difference that it makes, and the meaning that it gives, to our lives; such modest skepticism be permitted to us even after radical, Cartesian skepticism is dispensed with.

I share Irwin S. Bernstein's pragmatic attitude towards concepts, theories and world views: "Theories are neither right nor wrong, only more or less useful" (Bernstein 1990: 54). It may be *useful* to think that animals have minds, or that I do.

So, the nine "points" stated above are not meant to be taken as logical axioms, or as water-tight pronouncements. Instead, they are

meant to open up the entangled problematics of our curious, and curiously out-of-date, epistemological tradition — moving us beyond category dualism where “cognition” and “behaviour” are assumed to live in worlds separated by a non-crossable barrier.

### 3. Some epistemological assumptions in cognitive ethology

[W]e cannot know with the mind of a chimpanzee [...]. (Goodall 1990: 11)

That same question recurs in ethological literature constantly. It usually goes something like this: “What passes in the mind of a bowerbird [...]?” (Frisch 1974: 244) It is my opinion that while there is certain truth to the epistemological skepticism found in these two statements (and countless like them), we would be better off framing the question differently. How do we do it? First, we need to wipe the slate clean.

In this chapter, in order to claim that indeed we *can* know (theoretically) the mind of a chimpanzee, we shall take a look at three case studies of how philosophical assumptions, dualistic categorizations and epistemological quandaries arise to obfuscate the problem even in well-meaning ethological literature. Without pretending that we can answer any of the problems that arise, at least we can pinpoint them, trace their roots and show *how* and *why* problems come about. We can also expose some of the contradictions and impossibilities that arise if we take these questions seriously. This way, cognitive behaviourism arises as the relatively sane approach in comparison.

### 3.1. Frans de Waal

If humans and other primates show similar behavior, does that make the apes look smarter, *assuming that they put as much cognition into their actions as we do?* Or does it make us look dumber? (Frans de Waal 2001: 4; my italics)

This is a good and important question. However, let us take a closer look at the interjection: “*assuming that they put as much cognition into their actions as we do*”. The idea behind this statement can be analytically dissected in the following way:

- 1) Actions (behaviour) and cognition (mentality) are assumed to be paired, but somehow observationally disjoined in animals: we *only* see their behaviour, *not* their minds (allegedly).
- 2) In humans, on the other hand, such disjunction is assumed to be epistemologically non-problematic. In other words, *our* thoughts (intentions) are seen to be the antecedents (causes) of *our* actions (which are then seen as the consequences, in de Waal’s phrase, of ‘putting cognition into action’). This assumption has many problems. For one, this causative theory of human cognition fails to account for unmotivated actions, instinctual drives, sub-conscious or automated impulses, fluctuating and ambiguous thinking patterns (which we may have little control over), the social determinants of action and behaviour, the role of guesswork and randomizing of intentional expectations to suit the circumstances, etc... — that is, the whole reality of human consciousness interacting with, and not only imposing its will on, the environment. The human mind is seen to be “on the driver’s seat” (something that Freud, Nietzsche and Marx and others would have criticized). Our actions are said to follow unequivocally from this free-willed choice maker. This is the mind of the average, normal human being (apparently).
- 3) Now, let us follow the thought experiment to its conclusions. Behaviour is seen to be distinct from cognition. But, as often is the

case and the actions (behaviours) are the same (or similar) in animals and humans — like scratching or urinating — is there any point in valuing the human action higher than the primate counterpart, just because (allegedly) “more cognition was put into it” — even when from a behavioural perspective there is no difference? Somehow, it seems, we value the human side more, not only because we love humans more, but because the human being is (supposedly) “in control” of his or her actions and habits. Often, the similarities between ape (or some other animal) and human behaviour are dismissed as ethically incomparable because of our assumed internal differences. But what is this difference? This, for me, is the problem: if behavioural similarities between two species can be overlooked based on *a priori* (largely unmeasurable) assumptions about internal states, and if differences, too, are seen as evidence of unbridgeable dissimilarities between our “ontological” or “cognitive” make-up, what, then, in the absence of a miracle, could *conceivably* count as evidence towards strengthening the hypothesis of animal cognition, if animal *behaviour* won’t do? To phrase it differently, what could be the conditions of *falsifiability* (cf. Popper) of the “cognitive superiority” argument? There do not seem to be any; these are simply different (unfalsifiable) *world views*.

- 4) If cognition (whether as intention or self-awareness) qualifies behaviour with an imbued ethical “essence” (soul, mind, *cogito*), does it not follow that behaviour is seen as either the *consequence* or an *accidental corollary* of this disembodied “cognitive I”? Let us take them one by one.

If behaviour is the *consequence* — the result — of cognition, then behaviour should be traceable to its causes, that is, to corresponding antecedent mental states (intentions, emotive triggers, “wilful” operations on the world). Theoretically, this should apply to all behaviour, across all species of life. Then we shouldn’t have any qualms with endowing apes (or bumblebees, for that matter)

with cognitive powers — that is, cognitive power *proportional* to (the complexity of) their behaviour. In this interpretation, human beings have cognitive powers proportional to the tasks *we* set for ourselves to perform; apes, then, would have cognitive powers proportional to *their* tasks, behaviour, life journeys, etc... Because if behaviour is seen as the end result of “putting cognition into action”, then cognition (of a kind) is the *sine qua non* for any (animate) behaviour, almost by definition. What else could (human) behaviour be the effect of, if (human) mentality is seen as unilaterally causative? After all, if we really “intend” things and achieve them, then those things that happen are the causative effect of the mind’s setting things into motion.

But of course almost nobody subscribes to this kind of absolute idealism. Still, it happens to be the logical consequence of assuming, a) that human behaviour is mentally endowed, and b) that this mental endowment acts causatively (so-called “Free Will”), and c) that all behaviour can only have one cause (or “trigger” in behaviourist jargon). The resulting conclusion — that human behaviour can *only* be caused by corresponding mental trigger states — implies that either animal behaviour is also caused by mental cues, or else we need to come up with a completely new and different explanation as to why animals have behaviour *at all* (because behaviour, after all, has to be caused by something, by some “one thing” — for argument’s sake). In other words, the gulf between humans and other animals is not only that we have cognition and they do not, but that “we” and “they” operate on completely different causative and functional planes altogether!

This seems to be an untenable conclusion because of our shared origins: how could two things that have evolved from a common ancestor (say, chimpanzees and humans) have developed two completely different “operating schemes” (for example, “conscious motivation” in humans and “instinctual drives” in animals)? Again, the question is not whether humans have behaviour “plus”

cognition, but whether this cognition is either a necessary or sufficient condition for behaviour (because behaviour can exist without cognition and, allegedly — at least according to Descartes and Plato — cognition can exist without behaviour). If cognition is neither a necessary nor a sufficient (explanatory or efficacious) cause of behaviour, this puts into question whether human behaviour can be ethically judged at all (because it could just be random firings of neurons and muscle contractions and social pressures and subconscious fantasies and so on) — and, inversely, whether it is not a grave mistake to exclude *prima facie* primate behaviour from comparative cognitive studies. Ape behaviour, after all, could be the result of motivational thoughts. We might even find in animals signs of the “being-in-the-worldness” of an epistemological *cogito*, the transcendental ego of Descartes. But didn't we start our analysis from a criticism of the “isolated Cartesian ego” (Fisher 1990: 113)? Whether we see it in humans or apes is not the point; we should criticize the concept more fundamentally.

- 5) We have still to consider the *other* extreme alternative. Remember, we still have the option that behaviour (in humans) is an “accidental” corollary, or double, of cognitive states. We can call this the *Two Worlds Hypothesis* because it believes in the dualism of thought and action in the same “time-space” of the real world. This would leave the door open to the possibility that animals and humans share the same ancestry and causative-operational-functional (evolutionary) make-up, *but*, at the same time, affirm the “metaphysical” or categorical “surplus” of human cognition, which endows behaviour with an ethico-spiritual dimension that animals (for whatever reason) do not have. Behaviour, then, would be caused by roughly the same triggers and biophysical perturbations (not to mention Darwinian selective pressures) in both animals and humans, but that somehow this “physical” reality would not matter, because the cognitive superiority of human

animals would “cast a spell” on the material substratum and throw an ethical dimension into play, as the figurative icing on the cake, which allegedly acts as an “intervening cause” (*deus ex machina*) that glorifies or sanctifies any behaviour — even presumably, the act of urination and defecation — beyond the “merely animal”. Cognition — word we like to apply to ourselves — casts an aura of mystification over our behaviour. Even flatulence is endowed with spiritual meaning, because it happens to *us*, not to those *dumb* monkeys. See my point? As Desmond Morris writes (1967: 21), in his typically facetious way, “even a space ape must urinate”.

I believe that this idea (of seeing ourselves as spiritual beings over and above nature) is a relic of simpler times, of pre-Darwinian intuition. But now we face the double task of “bridging the gap from two ends”: we need to both see *our own* cognition as behaviourally (materially, externally, phylogenetically) conditioned, *and* to see “their” — that is, animal — behaviour as cognitively (mentally, internally, ontogenetically) conditioned. Only then will we approach some inquisitive balance. This way, we bridge the gap between cognitivism and behaviourism and stretch the “empirical data” on a continuum and also open our hearts and open our minds to the possibility of a non-judgmental inter-species dialogue.

### 3.2. Desmond Morris

After all, these encounters with our closest relatives can teach us unexpected things about ourselves. By studying bonobos, for example — whom Frans de Waal (2001: 41) calls “these ‘make love, not war’ primates” we may rekindle our appreciation for the innate human capacity to “evolve[...] peaceful societies” (de Waal 2001: 41) and, indeed, to flaunt and ritualize “the prominent social role of sex” (de

Waal 2001: 67). They, like we do, embrace the “non-reproductive use of sex” (de Waal 2001: 68) as a cultural pleasure.

The fact of the cultural use of sex makes nonsense of the biologically deterministic claims of those who, like Desmond Morris at times, revert to heavy-handedly normativizing our biological make-up. While it *is* appropriate to say that “the inherited qualities of more than a million years of human evolution cannot be cleared away overnight” (Morris 1982: 382) and that “[b]ehind the façade of modern city life there is the same old naked ape” (1967: 74), Morris goes way too far in his biological determinism when he argues (see 1967: 82–87) that the urge to procreate is not only a deep-seated drive but an actual *normative* standard, from which perspective he can criticize “aberrant” (Morris 1967: 87), “unsound” (*ibid.*) and “reproductively wasteful activities” (Morris 1967: 84). To be sure, he doesn’t attack casual sex or what he calls “play[ing] the field” (Morris 1967: 85) as such — as long as these remain as casual encounters that do not interfere with heteronormative pair bonding. In some cases, he claims, people can actually become *damaged*; as in the case of permanent homosexuality — which he thinks is “biologically unsound” (Morris 1967: 87) behaviour. For him, “homosexuals are [...], in a reproductive sense, aberrant” (Morris 1967: 87). Certainly I cannot agree with him here. The commonness of non-reproductive sexuality in bonobo societies (see de Waal 2001: 41–68) turns the tables against Morris’ grim estimation: “Bonobos engage in sex in virtually every partner combination: male-male, male-female, female-female, male-juvenile, female-juvenile, and so on” (de Waal 2001: 52). All sorts of non-procreative hetero- and homo-sexual favours — from full-on penetration and “scrotal rubbing” (de Waal 2001: 49) to kissing — are commonplace activities among bonobo communities, especially during feeding time frenzy and post-conflict reconciliation — that is, daily. Sex, in “every imaginable position and variation” (de Waal 2001: 52) — is used a means of peace-making and diplomacy. Bonobos, overall, seem to use arousal as a means of maintaining social cooperation and peace in

situations where competitive tendencies might otherwise break out into violence (de Waal 2001: 48–49). I say we still have a lot to learn from these creatures whose cognitive life too, it seems, is equipped to handle never-ending heat, making them more like us than we will easily admit.

Morris, too, could learn a thing or two from bonobos. Sexuality, as it happens, has evolved many different functions in society, procreation being only one of them. The old lie of the Social Darwinist Right, that biology determines morality, lives on in *The Naked Ape's* inventive but sinfully simplifying account of the origins of human behaviour. The old Humean dictum, “you cannot make an ‘ought’ from an ‘is’”, should help us vaccinate ourselves against such scholarly charlatanisms and legerdemain tactics. The descriptive and normative levels of analysis should be kept separate, which is something that Morris patently fails to do. His “biological determinism” (Morris 1967: 87) is nothing more than a petty excuse for a socially conservative, proto-fascist prejudice. This again serves to prove that behaviourism, without the element of freedom, is merely coercive.

### 3.3. Jane Goodall

A rather *different* sort of evangelizing can be found in Goodall's rhetoric (Goodall 1990). Since we have already noted her tendency to take things for granted (using words like *clearly*, *obviously*, *unhesitatingly*; see pages 16–17) rather than trying, strictly speaking, to *prove* her “personal convictions [that] were, indeed, difficult to prove” (16), it comes as no surprise when, only a few lines after having stated (the obvious but epistemologically irrelevant fact) that “we cannot know with the mind of a chimpanzee” (Goodall 1990: 11), she expresses her hope that “one day, we shall be able to see *even more clearly* into the mind of the chimpanzee” (Goodall 1990: 11; my italics). But wait a minute. If we “cannot know with the mind of a chimpanzee”, how is it

possible *ever* (in a million years) to “see even more clearly” into it, to penetrate it from without, even after all the knowledge and anecdotal data in the world has been collected? Clearly there is a contradiction, or a paradox, here. Can it be resolved?

Of course, her book is intended for the general public and is largely autobiographical, so it may be unfair to subject it to rigorous analysis such as we may direct at an academic paper. Nonetheless I think it is fair to ask, why does she feel the need to state, categorically, that “we cannot know” the mind of another animal from within (because, allegedly, they have internal access to it but we do not), and yet at the same time — and on the same page — claim that one day knowing their minds shall be possible, that it *is* possible? This is the paradox. It is both possible and impossible at the same time. No wonder that cognitive ethology has been heavily criticized! But I think this is based on a typical Western category mistake. If (and only if) we separate behaviour (the recorded ethological data) from cognition (the unknowable “something” *behind* all observable data, behind the veil of senses), we are indeed left with an irresolvable dilemma: either we say the animal mind does not exist (like Descartes), or that we cannot prove it (like Goodall). But if we do *not* draw a sharp distinction between mind and body, between cognition and behaviour, we are saved from such paradoxes! Goodall’s own caveat, that we cannot know “with” *other* minds, does not change the fact that we *can*, in fact, know their minds with our *own* minds, without any Cartesian or Kantian residue of *a priori* impenetrability. The matter becomes a purely empirical question, to be solved through ethological study.

In other words, I think all the necessary evidence, and all the necessary signs, are there. Goodall herself, upon witnessing a specimen who appears to be elated, writes about this unity of observation and truth: “There are *few observers* who would not *unhesitatingly* ascribe his behavior to be a happy, carefree state of well being” (Goodall 1990: 16–17; my italics). For the present observer, the animal’s elation bursts through its behaviour; it becomes an immediate, a manifest truth of

perception. Indeed: its behavior *is* (in) a state of happiness! The happiness is in the behaviour. To observe a given behaviour is to observe “a happy carefree state of well being” (Goodall 1990: 16–17) because emotions and cognitive processes are not (necessarily or entirely) internal and hidden. There is no invisible veil separating the observer and the observed. Of course, in this case (or any number of other cases — even *most* of the time) she might be *mistaken*, but that doesn’t change the picture. The point is not that the observer can be *wrong*, but that she *can* be correct. Any categorical epistemological disunion is a myth. Studying animal minds is no different than, say, studying their mating patterns or schedules of trains.

This way we can recognize and study the animals’ “essential Beingness” (Goodall 1990: 15), without taking anything for granted — certainly not the idea that “we cannot know” other minds because, it is said, we cannot penetrate their internal states; I claim that there’s nothing stopping us.

### 3.4. Donald R. Griffin

It is very easy to take things for granted, or to cede too much to public opinion or philosophical trends. Even Donald R. Griffin, in his analysis of different forms of mentality, bows to “a full recognition of the enormous superiority of human mentality” (Griffin 1990: *xiv*). Two problems here: the words “superiority” and its “enormity”. Let us take them one-by-one.

The word “superiority”... First of all, can mentality (whatever it means) be scaled hierarchically? If so, how? Can we say that dogs’ brains (and mental capacities) are ‘superior’ to a wild bull’s? Can we say a dolphin’s brains are “superior” to an orangutan’s, or vice versa? Superior in regards to what purpose, to what end? As we know from nature, the selection processes that wean and sculpture bio-organisms are subject to adaptive pressures that are context, locus and niche

specific. We would have to assume some biospheric-universal telos — be it God or Man or Gaia — if we want to compare all species according to some fixed yardstick. The “superiority” that Griffin is talking about is undoubtedly the manifest dominance of man over its competitors, underlings and coinhabitants. The highly adaptive advances that man has made over natural fluxes of pests, hardships and acclimatization pressures have clearly been the result of increased mental capacity, especially as directed towards social co-operation and communication, as well as rational reasoning and frontal lobe thinking.

However, even this “superiority” is only *relative*, as is becoming increasingly clear with the prospect of mankind being on the verge of blowing itself up due to nuclear bombs, overpopulation and climate change. It has been said that, in the worst case scenario of mankind’s extinction, “the rats will outlive us” — and if this is so, how can we assert our (adaptive, mental — let alone *absolute*) ‘superiority’ over the dumb little rat? After all, as Morris (1967: 196) wisely says: “To the zoologist, all animals are, or should be, equally interesting”. We have to be very careful with using man’s standards to measure nature’s variability. If we want to compare and “rate” mental achievements and capacities “objectively”, we have to do it from a particular selective-adaptive viewpoint (as in the case of multiple species competing for some limited resource in a given niche). Even more rigorously, we may want to compare specific brain structures and architectural similarities in the “design” of a range of genetically related organisms and look for patterns of differentiation and emerging complexity which may tell us about the possibilities and impossibilities of a given central nervous system for completing certain tasks, achieving certain objectives and, perhaps, emoting in a predictable and measurable way. DNA-similarities and “gene tree” branchings are the blueprint for systematic study here, and all “superiority” is only *superiority of specialization*. Many interesting pointers in anatomical studies exist. De Waal, for example, points out that bonobos seem to have a rather “humanlike distinction of special neurons in the frontal cortex” (de

Waal 2001: 43). The following conclusions drawn by Richard W. Byrne (Byrne 2001) seem to further demystify the “superiority” of human intelligence:

1. “[M]onkeys and apes have brains that are on average twice as large as those of a typical mammal of equivalent body size” (Byrne 2001: 158). This puts us in a privileged category, but with some unwanted company. This implies that we are not so far from “the rest” as we might think.

2. Moreover, certain “carnivores and cetaceans” (Byrne 2001: 153) have developed, apparently through convergent evolution, the capacity for big brains and some level of measurable intelligence. So much for the uniqueness of human gifts, if even “higher cognition” can develop multiple times!

3. Perhaps most importantly, the “enlarged neocortex” (Byrne 2001: 149) of monkeys develops, when it comes to the great apes (apparently), the capacity for “some understanding of intentions and causes [and this] comprehension is based on an ability to perceive, and to build, complex novel behavior” (Byrne 2001: 149). Here, in “the nonlinguistic mind” (Byrne 2001: 151), we have what Byrne thinks are the fundamental beginnings and rudiments of complex thought and language. If language begins as rudimentary model construction, then human *language*, with its complex syntax, is far from being the “gift of the gods” that it’s often claimed to be — any more than *fire*, or *cooking*, or *pair bonding*. He summarizes his position: “The underlying cognitive superiority of great apes over monkeys might best be described as a difference in forming and manipulating mental representations” (Byrne 2001: 168). Here it is very easy to think about Uexküll or Sebeok: “Manipulation of these data structures in the mind amounts to mental simulation of the world” (Byrne 2001: 168). If this is true, then the origins of language have been discovered. After all, we should remember that for Sebeok, language is first and foremost a *model-building* capacity, and only secondarily a *communicative* capacity. Byrne’s efforts to sketch out pre-human models of cognitive compe-

tence are highly intriguing and deserve further study and elaboration. Perhaps these next few years will be a watershed moment in our understanding of language, cognition and the evolutionary stages of primate development.

Back to the phrase “enormous superiority”. My obvious second gripe is with the word “*enormous*” that qualifies the (in-itself problematic) word “superiority”... It is not as if any enormous difference between human beings and, say, great apes is a given fact. If we believe in the emerging consensus that the structural (DNA-specific), social and cognitive modalities of all known primates present more like a continuum (punctuated, to be sure, by the linguistic and semiotic innovations of *Homo Sapiens*) than a god-given separation, then we can question the smug wisdom in taking the “enormity” of our separation from our next of kin for granted. It smacks of a “speciest” remark and a mind-soothing but unforgivable prejudice we tell our children at night. And if the fact of emotions in “lower mammals” (like rats and dogs) and higher cognition in sea mammals (dolphins using mirrors and individuated call signals) are added to the picture — not to mention the whole hullabaloo of ASL and computer trained great apes — we are left with a deeply perplexing, radically new way of looking at the world and our place in it. Then no longer can we say, at least not without hesitation, that “[o]f course human thinking is *astronomically* more complex and versatile than that of other species” (Griffin 1990: xiv-xv, my italics). More complex? Perhaps. More versatile? Almost certainly. But the differences are not “astronomical” as much as perfectly, undeniably down-to-earth: humans and apes are evolutionary siblings, years, not light-years, apart.

“Behind the façade of modern city life there is the same old naked ape” (Morris 1967: 74). This sensationalist claim is pretty accurate: “Not only are chimpanzees and bonobos genetically our closest relatives, the reverse is also true; that is, chimpanzees and bonobos are closer to us than to, say, gorillas” (de Waal 2001: 2). The closeness of our bond to these animals (with their complex emotional lives and

social bonds) has led the biologist Jared Diamond, for example, to argue that “we should be placed in the same genus as chimpanzees and bonobos, making us the ‘third chimpanzee’” (referred to in Pusey 2001: 11).

This fact becomes very apparent in ethological field work; as Goodall states: “Some of the emotional states of the chimpanzees are so obviously similar to ours that even an inexperienced observer can understand what is going on” (Goodall 1990: 16).

Even human language has its roots and origins in a common ancestor. I fully agree with Charles T. Snowdon’s “empiricist approach to language origins that establishes language as the current end point of a continuum of communication abilities” (Snowdon 2001: 226). This flies against Sebeok’s world view, but also against Chomsky’s unverifiable universal grammar theory and other Cartesian assumptions about “magical” human cognitive capacities. Whatever the rationalist philosopher may want to think and believe, “[t]he discontinuity theory is implausible because evolution [proceeds] only by accretion of beneficial variants of what went before. Language is a unique yet highly complex *adaptation*” (my italics) so that it cannot be “completely unrelated to the cognition of other species” (Byrne 1990: 148).

So striking is the human-ape connection, both cognitive and behavioural, that elsewhere Frans de Waal writes that “[b]onobos standing upright [...] resemble an artist’s impression of Australopithecus” (de Waal 2001: 44). Bonobos even engage in the all-too-human practice of “face to face copulation” (de Waal 2001: 51) — a sure sign of civilization as we know it. We have already mentioned their propensity for sexual pleasures and pastimes of all kinds, both homo- and heterosexual. Here the connection to human behaviour (and cognition) is undeniably clear. As Morris writes of mankind’s double standards: “He is proud that he has the biggest brain of all the primates, but attempts to conceal the fact that he also has the biggest penis” (Morris 1967: 9).

What are the fundamental motives that drive human cognition/behaviour? *Surely not* copulation and biological procreation? Is our human sense of lofty liberty drenched, secretly, in the pleasures of sex? The thought is too much for public decency to bear. This kind of mystification and birthing of cultural taboos is, frankly, to be expected from a society unsure of its origins and deeply shameful of its gifts.

What is the difference between liberty (*freedom*) and libertinism (following one's instincts, that is, *un-freedom*)? I claim that there is no difference. *Freedom is behaving* (towards the fulfilment of biological and cultural and personal imperatives). Cognition, on the whole, can best be explained as behavioural patterning.

In other words, the mind *is* the machine. This dualism simply cannot hold: freedom (cognition + responsiveness) and obligation (nature + nurture) co-exist in the same animal. The DNA is the source of freedom.

#### **4. Language and cognition: Are we the special species?**

How, then, does freedom come to be seen as A) unique to humans and B) separate from our organic, biological constitution? How does the mind come to be seen in this light?

The consensus opinion, often implicit but also quite often flaunted with pride, is that there is some unique quality to humans, some special stuff that separates us from the rest of the animal kingdom. More often than not that special something is given a name: *language*.

According to Sebeok, "language" is a name that properly should only be applied to the human modelling system, as opposed to other, generally communicative and less "mental" systems that other animals quite frequently evolve to employ: "*That language is a biotic property specific to man is true — a truism even*" (Sebeok 1981: 210 — the very first sentence of the chapter). Clearly, he says, chimpanzees or great

apes cannot be taught language (that is, ASL), because language, categorically, is a dimension of the human Umwelt alone.

Now, whatever the empirical reality of the pedagogic human-animal relationship in the case of Washoe, Koko and others — I would argue that the evidence is much more convincing than Sebeok admits (see Martinelli 2007: 230–275) — Sebeok’s argument here (actually more like knee-jerk reaction), seems to rest on a bundle of interconnected assumptions and prejudices, what I would call the “Special Species” argument, that is, the assumption that humans are “*animals who ... X, Y and Z*”. Now, whatever that something — that “X/Y/Z” — may be, it is always something *more* than our “animal nature”, more than our next of kin. Human soul, then, is made out of some special stuff (for example *res cogitans*). We are given an immortal soul or a transcendental ego.

The idea of a minimal — but fundamental and unbridgeable — gap between Us and Them, in another words the presence of some *extra-natural surplus* in the *Homo Sapiens*’ bio-cognitive make-up (some “spark of the divine”) is a common enough claim in the realm of contemporary human society, science and religion. It is also all that many people need in order to reject out of hand any horizontal (“fraternizing” or participatory) conceptualization of the biosphere. The “human vs. animal” model is prone to produce strictly vertical (“patronizing” or dominatory) hierarchical schemes where humans are on top, either by *design* or *conquest*.

The argument from *conquest* simply states that humans are superior to animals because of our superior skills or greater success. We are *de facto* superior. Our superiority could be simply the result of our greater physical ability and our warlikeness. Many Social Darwinists subscribe to this view, although they often see our brains as our best weapons.

The argument from (natural or divine) design is much more pernicious. In Genesis, men and animals are *created* unequal. This difference is God’s command. Likewise, in Cartesian philosophy man is

*inherently* different from animals (which are little more than machines). We are *de jure* categorically, metaphysically superior.

These two theories are both wrong, I think, but at least we can recognize *de facto* inferiority (e.g. the powerlessness of small tribes in the face of Westernization or the powerlessness of hedgehogs in the face of tractors) without postulating any *a priori* or metaphysical “natural” difference. The play on the word “natural” is crucial. We think that what is “natural” is supposedly unfree, but this is precisely what I want to argue against. We do not need to embrace Pavlovian behaviourism to disavow a dualism of substances where a soul or a mind is postulated as the differentiating principle that endows humanity its cosmic centre place.

Anthropocentrism emerges out of the European-American intellectual heritage of language-centrism. The centrality of the *logos* and the cosmic centrality of man as “the animal that speaks” are closely intertwined problems. Because of their “dumbness” (in the double meaning of *mute* and *stupid*), philosophers have not thought about “animals” at all as subjects. In the case of the ASL language acquisition of apes, for example, Sebeok’s skepticism is not empirical, but categorical and philosophical. Sebeok’s dissonance, in this regard, with the emerging empirical reality is clearer today than ever, when the fields of musicology (cf. Martinelli), architecture and sociology of animals are gaining ever growing ground. Even deeper than that: the Cartesian position (which supports the equation, *mind=language=mind*), in Richard W. Byrne’s words, the idea that “[h]umans alone are quite different because they possess language which underlies every major intellectual achievement of humanity” (in Byrne 2001: 148), is heavily outdated. According to this problematic view, held on tight by Sebeok and others, there exists “an animal whose awareness is not wholly tied to biological constitution” (Deely 2001: 6): *Homo sapiens*. I claim that this view is based on little evidence.

It is a prejudice reinforced by repetition and tradition. We have a gut feeling that there exists a body-soul division. This idea has been a

conceptual part of the intellectual history of the West since Aristotle's definition of man as *zoon logon echon*. It is a deeply felt intuition that there exists a breach between our bodies and our minds, whereby the very existence of the inner world is seen to justify a certain amount of ego-solipsism, which in turn leads to species-solipsism (via the persuasive powers of social interaction and the quite biologically determined co-operative instinct which leads us to bond with our DNA relatives both in thought as in action), a.k.a. species-centrism — in fact anthropocentrism and culture-centrism. In this regard, the concept of a linguistic-psychological other-worldliness is part of the inherited, unreflected set of beliefs that any child born into the industrial West will learn at an early age. Since the *modus operandi* of the Mind is seen to be rational thinking, and the *modus operandi* of rational thinking is supposed to be linguistic performance<sup>3</sup>, in philosophy there has been little factual distinction between philosophy of the mind (psychology) and philosophy of the language (linguistics). Human beings have an inner capacity for self-reflection, and this capacity is, by nature, linguistic. The first possible consequence of this is clear. If we assume that other animals do not think (rationally), they cannot have a language (quite like ours). The alternative, equally pernicious, consequence is that, if we assume that other animals do not have a language (quite like we do), then it follows that they cannot think (rationally).

We are led to believe that introspection, because it seems possible, reveals the existence of a uniquely autonomous Inner Zone. But this Inner Zone (or *Innenwelt*) is simply a local manifestation of a global biosemiosphere, a confluence of influences expressing itself as a localised semiotic Web, a phenotypic instantiation of the larger natural processes of *variation, speciation and individuation* (discussed in the next chapters). Our failure to see “freedom” as a *general principle of*

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<sup>3</sup> A line of reasoning heavily criticized by people such as Freud, Jung, Kristeva, Žižek and Derrida.

*nature* is caused by a mistake on the level of our language and psycho-semantics. The “free” (that is, stochastic) combination of linguistic material within a human being (a person’s *performative* capacity as a speaker and a writer, as measured, for example, by Chomsky’s *generative grammar* competency) should not be confused with any *system-transcendent* freedom (a person’s alleged meta-capacity for *world-disengagement* as a soul). Since this is an important point, I shall rephrase it: freedom of thought, which expresses itself as a radically unpredictable “trace of the author” in *text* (or, more broadly, in *semiosis*) forces us to posit an inherent mystery at the heart of our being, an unexplainable something. In Deely’s (2001: 6) words, “what we will say in [a] language” remains underdetermined. We can neither explain the “poetic freedom” of artists nor the linguistic versatility of our young... In a way, we out-smart ourselves. We try hard to *explain language through language*, which is ultimately impossible. Since we cannot hope to explain or describe our linguistic expressions without using linguistic expressions (for example, “*cogito ergo sum*”), we easily fall to solipsism. Language and cognition are, to some extent, self-referential and self-transcending mechanisms for producing unpredictability and novelty. I will argue (in the next chapter) that such free mechanisms are biologically determined — determined to be free.

If it is true, as Robin I. M. Dunbar argues (in an article called *Brain on Two Legs*, Dunbar 2001: 175–191), that “we probably owe our success as a species to our sociality” and to “culturally transmitted solutions” (Dunbar 2001: 175), it is no wonder that an ideology of species-centrism (especially in its stronger variants) has had adaptive value for a community of language-users. Language, after all, is a means whereby social identity and “culturally transmitted solutions” most often are spread (at least in highly communicative, rather than imitative, human societies). Since language, by definition, excludes the voices of non-speakers, should we be surprised that ideologies transmitted by its means tend to develop a “pro-speaker” (selfish) bias? Furthermore, if this is compounded by the social benefits that such an

ideological solution might bring (because it fosters “in-group” solidarity and, consequently, social harmony), as a survival strategy for a species that is in competition with “non-language-using” societies and communities, it is quite obvious that the project of “equipping” animals with communicative and modelling skills (semiotic/linguistic fluency) is to be met with some hostility, disbelief and cognitive dissonance on an individual basis; and on the community scale, as well, it is likely to meet considerable political (that is, mammalian DNA social) opposition, from the vested interest of preferring the *in-group* to the *out-group*. Our language, after all, is a means of “speaking among ourselves” and to ourselves, from our perspective as social information processing systems. To be sure, exposing such an open-ended bias does not *prove* that animals have mind, any more than its opposite, but it serves to remind us of the dangers we face. And indeed, “studies of the content of naturally occurring conversations suggest that we typically devote 60-70 percent of our conversation to social topics” (Dunbar 2001: 191). During that 60-70 percent, we have to appear likeable, and liking, to the other person. This explains why language favours pro-ingroup (socializing) and anti-outgroup (“strangerizing”) strategies and topics. Foreigners, as well as minorities, women, children and animals, have been systematically at the receiving end of this. The politics of speech, of course, is an increasing subject of study in sociolinguistics. Perhaps this might serve to remind us of the animal origins of communication. Wolves, for example, as social beings, like to communicate to their kin, but can be tamed and domesticated to develop new kinship strategies to other species (including humans and cats). The same with the human animal: only education and liberalization of society can counterweigh the naturally suspicious and selfish nature of social discourse among “socialized” adult human beings.

To return to the quote from Karl von Frisch: “What passes in the mind of a bowerbird when he builds and decorates his bower? Naturally, I cannot answer [my own] question. No one can. [... Still, in bowerbirds] not only insight into the consequences of their actions but

also evidence of aesthetic feeling are found” (Frisch 1974: 244–245). But that is just one example (see, for example, Nagel 1974). One need not list *all* the animals that “*have cognition*” as if they were “card carrying members” of the Cognitive Club. Instead, one should try to prove a *cognitive continuum* through persuasive examples and reasoning. After all, if we can prove (beyond reasonable doubt) that animals *as a kingdom* are capable of freedom of choice, freedom of expression and freedom of movement, then the special place of human beings *as a species* is put into question. Freedom, it seems, is a biological privilege, a programmatic endowment of the DNA code, not a result of “awareness [...] not wholly tied to biological constitution”, in Deely’s (2001: 6) loosely dualistic phrase (echoing not only Sebeok but Chomsky, Descartes and Aristotle).

Biology is not the enemy, or antithesis, of cognition. Behaviourism and spiritualism are the two antipodes of stripped down dualism. Life, in these barren ideologies, is reduced to a single, dead principle — be it life without substance or substance without life.

Freedom, if it is to mean anything outside of theology and political rhetoric, has to be as the capacity of a species to emit signs which betray the presence of some kind of *originator*, or source of action. *Freedom is the capacity to be observed as a stochastic (i.e. unpredictable) centre of semiotic Innenwelt/Umwelt-metabolism.* We cannot know about things except as objects (as Kant proposed; see also Deely 2001). By the same token, I do not even know if *I, myself*, am “really” free — it only *seems* that way, and I’m ready to act accordingly, to *behave* “as if” I do have freedom. The same with animals: we cannot *prove* freedom, only *observe* it. When an animal (apparently) acts like a source of self-directed sign processing (that is, a dog that does not salivate when Pavlov rings the bell in eager anticipation<sup>4</sup>), we may call

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<sup>4</sup> To paraphrase Dario Martinelli’s thought experiment, how can we be sure that it is the *dog* that has been put under the spell of conditioning and not the behaviourist instructor? After all, with surprising regularity, the white-coated

it a bio-computer regulating its own sign-economy. But when we say this, we should remember the human being is likewise a bio-computer; again, if narrowly defined. I am in line with Julien Offray de la Mettrie, whose concept of *l'homme machine*, while somewhat reductionist, does not entail a radical break between the animal kingdom and *Homo sapiens*, nor does its mechanical worldview deny the mental life of either animals or humans (as Descartes did); instead, it represents a continuity hypothesis of the biosphere, almost proto-evolutionary in its assumptions and conclusions. Of souls, he said that “each animal has his own” (de la Mettrie 1748; unpagged). Coming from a self-avowed anti-spiritualist materialist this is quite a statement. It can only mean that mechanistic and vitalistic theories can well co-exist.

Having examined and rejected the idea of a disembodied free spirit, we can look at the mind as a physicalistic, emergent property subject to biospheric adaptive pressures. Charles T. Snowdon supports the theory of the gradual development of language systems, in his article, *From Primate Communication to Human Language* (Snowdon 2001): “The developmental and adult data from nonhuman animals support a bottom-up empiricist approach to language origins that establishes language as the current end point of a continuum of communication abilities” (Snowdon 2001: 226; my italics). He thinks it is simply more “parsimonious” (like Bekoff 1995) to assume this is so. “While humans do have species-typical adaptations for speech and language, it is not necessary to hypothesize special perceptual abilities, special cognitive abilities, or special brain structures [contra Chomsky] to support language. It is more parsimonious to view these as resulting from the increased survival value accruing from the complex communication

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two-legged mammal will come out of his lab-hole, with a bell at hand, to feed him. And when he eventually rings the bell without giving the poor dog any food, the dog must be thinking (in *Caninese*): “Is this guy serious? What a jerk.”

abilities that have evolved during the process of primate evolution" (Snowdon 2001: 226–227).

In other words, language predates man, and so does cognition.

## **5. An evolutionary view of cognition in animal behaviour**

The main problem, then, for theoretical zoosemiotics (and biology in general), we have seen, seems to be the problem of language-centrism, and the related issue of the “descriptive bias”. Language is not what separates us from the other animals (or even — as Christians and Aristotle believed — from *all* animals as such), except in the trivial sense that *any* Umwelt-specific trait acts as an isolator and a barrier. Surely sucking blood differentiates mosquitoes and vampire bats from (most) humans, but it does not put either the bat or the mosquito on “a higher level” than us. To be sure, the human cognitive-behavioural organism is probably the most developed in the world. We are pretty *amazing* — there, I said! But realistically speaking, the Umwelt-construction of any single species brings with it strengths and weaknesses related to specific conditions or sets of bio-physical circumstances that open up within the context of a species’ Umwelt-Innenwelt metabolism. Life involves directing the energies of the surroundings into one’s own ends. The weak version of this “bio-egotism” theory simply says that life struggles to survive (metaphorically or literally); the stronger statement has it that the birth of self-consciousness is a direct correlate of the need to self-regulate (actively and wilfully). I imply the latter: that consciousness is a rather common and early occurrence in natural history. Consciousness comes in *degrees*: from nullity to humanness to (one would assume<sup>5</sup>) something beyond that.

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<sup>5</sup> This is simply the result of seeing consciousness as an emerging property of the natural world. Unless humans are the final culmination of evolutionary history,

The way the mind interprets signals is biologically determined. The behaviour that we act out is biologically determined, but not *exhaustively* pre-programmed. Instead, behaviour and cognition are *under-coded*: something remains to chance and contingency. This DNA blueprint gives us, as it were, our “*scope*” of freedom (that is, freedom-within-parameters-of-possibility). A species’ DNA-given, phylogenetically determined freedom accounts for its “behavioural flexibility” (Dunbar 2001: 183). Now, if we accept this hypothesis, we have reached a position *between* strict behaviourism and strict cognitivism. It is only from such radically *null* perspective (what Barthes called “degree zero” and what Žižek, more recently, has dubbed the “parallax view”) that we can begin to criticize statements such as the following:

For when it comes to the human being it is true but not enough to say that we live in a bubble wholly determined by our biological constitution. [...] The human modeling system, the *Innenwelt* underlying and correlate with our Umwelt, is, strangely, not wholly tied to our biology. [...] When we are born [...] what we can see or sense in any direct modality is established and determined, just as is the case with any animal life form. But what language we will speak or what we will say in that language is far from so fixed and determined. (John Deely 2001: 131–132)

I posit to the contrary that the “*Innenwelt* underlying and correlate with our Umwelt” *is* wholly tied to our biology and structurally dependent upon it. This is because biology, far from being a fixed thing, is precisely a kind of “call” or “permission” or “commandment” *to be free* (in a specific way), that is, to determine the actual consequences of our given constitution through our actions. Biology is not the

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consciousness has a past and also a future: it is reasonable to assume that our evolutionary successors will be *more cognitive* than us. It is also possible, if not probable, that on other planets higher intelligences live. We have no data on that yet, but the probability of that being the case rises after each new astronomical discovery. Earth-like planets, while rare, seem to be billion-fold in the universe.

“opposite” of freedom, but its *prerequisite*; biology is the architectural and structural condition of freedom as such, of unpredictability of habituation as such. What, anyway, could be the alternative? Strict physicalism assumes too much (or too little), and speculative vitalism begs the question. Dualism, on the whole, where the difference between the physical and the metaphysical is maintained, hardly seems like an enticing alternative anymore, not after its inherent contradictions are exposed, and after its Christian sentimentalist slash hyper-rationalist paranoid skepticist basis is unveiled. For the purposes of our analysis, without making any greater ontological commitments, we propose a radical monism, which seems like the only way to escape dualism. This entails the unity of behaviour and cognition, Innenwelt and Umwelt. In other words, behavioural action *is* freedom. *To behave is to be free*. To be seen to behave “as if” one were free *is to be free*. To behave, systematically and measurably, but always — to some extent — unpredictably and stochastically, is the liberty-loving “M.O.” of all life on earth.

All life is in competition with itself, with its different forms: “evolution in an ongoing dynamic process” (Bernstein 1990: 38). Speciation is variation, as Darwin knew. Variation is modification according to selective pressures. “Nature,” in the words of Heraclitus, “likes to hide itself” (my own translation of his fragment 123: “φύσις κρύπτεσθαι φιλει”). This means that nature, with its many life forms, tends and strives to be *free* (that is, unpredictable, that is, in unique “bio-physio-chemical” locomotion/transformation) — for example, free of *death*, first and foremost, but also free of *immobility* and also free of any purely physical, inanimate, “externally defined” *pattern* — as if animals were dead leaves floating down the river in spiralling swirls... Animals, after all, are *not* dead leaves in a river, but sailors of their own destinies. Such metaphors, of course, are not to be taken as descriptive of the *quality* of the internal life of animals, but of the deep-seated biotic drive towards self-regulatory “I-ness” that regulates ontogenetic behaviour and cognition on many levels. To be a “species”

implies to be “different”, that is, to be a “*variation of form*” (across some genetic or biomorphic plane); a biological *attempt* (experiment) at embodied structuration of freedom.

Nature is in constant flux. The very idea of species, as Bernstein reminds us, “is a pre-Darwinian concept” that betrays the complexity of natural selection; instead, “we will always find species somewhere in the process of speciation” (Bernstein 1990: 38). See also John C. Fentress’s article in the same volume for a deeper look at “dynamic relational and multilayered processes” (Fentress 1990: 28) in animal behaviour, as an attempt to explain cognition on the basis of behavioural data.

Evolution implies deep history (*viz.* Charles Lyell), so here I will propose a suggestive semiotic theory for the birth and development of nervous systems and brain-minds out of many evolutionary precursors and parallel developments. Biomass emerges out of the realm of abiotic factors, somehow, and spirals matter into self-governing, self-enforcing loops of development. This is the birth of life. The birth of such a process may well have been “accidental” in some sense (a fluke of history). At any rate, it seems likely that the birth of semiotic relationships (*viz.* Peirce, Sebeok, Deely; the American school of semiotics) coincides with the historical emergence of self-directive, self-protective and self-defending bio-molecular proto-organisms. It is not necessary, here, to recap the (anyway imperfectly understood) early evolutionary history whereby prokaryotic organisms complexify and develop into eukaryotic and ultimately hierarchically organized polykaryotic “cyto-societies” (intra-organistic biospheres) that we know today. Clearly the branching of life forms owes its historical imperative to the bio-organic diversity of the abiotic conditions wherein the mobile niche-seeking cultures of cellular biomass were forced to adapt, change and specialize according to the demands of each and every locus of development and acculturation. This branching is seen as hierarchical, from the large kingdoms, genera, phyla and species to the level of sub-species and variation amongst

population. So, the true heart of this branching — and its “active centre” — is the ultimate singular “event” of species variation (the mutation or recombination of inherited material in the form of a new species). It is also present in Darwin, where “speciation” is just the “variation” of *successful* forms. Variation benefits the individual by giving him as much “freedom” (to adapt, choose, mate, evolve) as possible: freedom to make the *right* choices (to flee from a spider), as it were, but also to make *mistakes* (to flee from a rabbit) and to try to evolve.

So, the individual is the fundamental “localization” of this biotic drive towards diversification and multiplicity. The actions, choices and cognitive processes of the individual animal are, as it were, *the vanguard of evolution* (lit. “front-line”, “the conscious part”, of the biosphere). This is not to be confused with Lamarck’s idea of the inheritance of acquired characteristics. The “freedom” that we have is perfectly DNA-endowed (and so the dogma of DNA-RNA-Protein “chain of life” is not sinned against). Freedom is mandated by our genes. Presumable choices affect evolution mainly through survival of the fittest and sexual selection. Whether some other epigenetic factors play a part in DNA mutation is still unclear.

My beliefs, as presented here, have suggested a relationship between Cognition, Umwelt-Construction, Freedom, Responsiveness, Variation and Speciation. I have emphasized the *continuity* hypothesis of natural forms as resulting, pure and simple, from shared inheritance (which as far as we know involves DNA-based semiotic systems of communication and various corollary encoding/decoding-processes), as cohabitants of the Earth’s biosphere. This inheritance, while phylogenetically seemingly *causative*, is not “fatalistic” or “deterministic” on the ontogenetic, mental-behaviouristic level of the individual (the level of Innenwelt-Umwelt metabolism), because internal freedom, that is, mental responsiveness through choice-making, is a crystallization and a localization of the biospheric principle of Adaptation in the cognitive “inside” of a central nervous

system. Freedom (cognition) is the way in which open-ended DNA processes become “interpreted”.

Here is a summary of my views:

Speciation is the Causative Result of Selective Processes of Phylogenetic Variation

Mental “I-ness” (Internal Responsiveness) is the Ontogenetic Cognate to Phylogenetic Speciation

Adaptation = “Stochastic” Phylogenetic Variation + “Free” Ontogenetic Cognition

Being an animal implies “*being-an-animal*” and not just “*being-an-animal*.” The animal (like the human being) is, in Sartre’s words, “condemned to be free” (for example, condemned to select its mates and meals). The animal is in this interstice between necessity and contingency; some species more than others. Some species probably have almost no “I-ness”, only enough to stop them from dying. But to have none is death. After all, the absence of internal responsiveness is the death of an organism. A very simple algebra can be developed: bigger brains, more “I-ness” (consciousness).

We must admit that stating that I-ness and behaviour go hand in hand must involve some bit of circular argumentation. This would be a problem if we were trying to *prove* anything. Instead, we have to assume it before we can prove it, and it is very difficult to prove “world views” conclusively. But is it very *easy*, indeed, to try out different working assumptions, and see which fits best. Superfluity, parsimony, sufficiency and necessity are some of the criteria by which to judge the value of assumptions. It is my belief that assuming the “cognitive-behavioural” continuity hypothesis is very parsimonious indeed and full of explanatory power. It is parsimonious because Darwinian Theory almost *requires* it. It dispenses with the superfluity of assuming a metaphysical “thinking substance” and a man-animal metaphysical gap (and other dualist dead-ends). It might well be sufficient, too, to explain the evolutionary history thus far. And it might be necessary,

for ethical as well as for epistemological reasons, as part of the present-day “green” revolution.

But what, exactly, is the role of cognition in evolutionary theory? The operation and functioning of the largely “hidden” (because invisible in the fossil record) laws of Darwinian natural selection (the mechanism whereby, say, a *lizard* becomes a *bird* as most palaeontologists think has happened) is, after all, according to the accepted theory largely through *random* genetic mutation. This is of course true. But the role of sexual selection also plays a part, and so do ecological pressures. Most evolutionists, myself included, think that natural selection operates on the DNA-level as well as on the cognitive-behavioural level. In fact, the “choices” of animals (whether comparable to human choices or not) in their responsiveness and adaptation to changing environmental, climatic and biospheric conditions are also agents of evolution. These choices — behavioural responses to stimuli (like me writing this essay or Pavlovian dog salivating) — are the mind’s cognitive contribution to natural selection. This is pretty much uncontroversial in science. See, for example, Robin Dunbar’s analysis of brain evolution: according to him, “completely hardwired behavior would be a recipe for evolutionary disaster: environmental conditions can undergo substantial change on a scale much shorter than an animal’s life span” (Dunbar 2001: 183). In other words, animal species should be able to *adapt*. The power to adapt is DNA-given; in this sense, *freedom is programmed*. Freedom means being free-to-behave.

Behaviour, to the degree it is conscious, is somewhere between fully *unpredictable* and fully *predictable*: unpredictability (of the sort that is favourable to the survival of the species of the individual) is, by and large, the sign of higher intelligence or, at the very least, higher adaptive capacity. In information theory, unpredictability is the sign of novelty (of a high “information-over-noise” ratio). Humans and other primates are unusually (perhaps uniquely) unpredictable, which reflects their and our relatively higher cognitive capacities, but nature has provided *Animalia* with a grand continuum of adaptive strategies

for producing “unpredictability of behavioural-cognitive responsiveness” in the different branches of the evolutionary tree.

After all, the development of nervous systems capable of self-awareness and fast, malleable responsiveness (as it were, “responsibility”) is certainly a preferred adaptive strategy.

Whomsoever has the “I” has the upper hand.

So, it seems that the phylogenetic “Bauplan” favours the birth and flourishing of these highly complex, fast, “self-aware” (to the extent of their brain’s structural endowments) and self-protective sign processing systems, which are physical-temporal manifestations of genetic material. We call these cognitive-behavioural systems *animals*. Cognitive minds, to different degrees, have rapid response times (measured often in microseconds) whereas random mutation and weeding out of the unfit can be excruciatingly slow (measured often in hundreds of thousands, even millions of years). Cognition is the “speeding up” of unconscious natural variation and thus its apotheosis and highest form. Cognition is not an “on/off” thing, but the recognition of the “nowness” of the “cognitive-behavioural” *me*-situation in different “degrees” (remember Darwin 1871: 105) of self-awareness. I believe that by studying brains, nervous systems and the behaviour of animals, this “internal” I-ness becomes manifest, literally, before our eyes, without any magic tricks, hocus pocus or leaps of faith. By studying cognitive ethology, and by *witnessing* the cognitive-behavioural *logos* of the *ethos* in animals (including the human animal), we can work towards better understanding the kinds of minds that nature has developed. Thereby we’ll come to a better understanding of the self-awakening of cognition (internal responsiveness) in the phylogenetic tree and we’ll be able to map the key points in the evolutionary tale of cognitive development. Responsiveness to stimuli is the key here, as the material side of cognition. So, ironically enough, it is radical *behaviourism* (radical *empiricism*), that old foe of cognitivism, which opens the doors of perception to cognition.

This flies in the face of all known dualism, and all epistemological dead-ends that we have had because we have assumed that world views have to be *verifiable* to be true. But things can only be proven if they are well defined. Having failed in the latter (to define the parameters of the problem), we can never succeed in the former (to prove that we have satisfied the relevant truth conditions of animal cognition). New “windows” are required. If we acquire new windows, the world remains the same; it does not care for our house renovation plans! At most, we will have a better vista into our own lives and into the outside world, providing us with the sort of immediate vision that enables us to read animal behaviour (and interpret the ethological data) for relevant signs of cognitive endowments and skills. The question, then, becomes a wholly empirical one.

## 6. Behaviour *as* cognition; cognition *as* behaviour

Can we provide a *compatibilistic* account of freedom and causality? I believe so.

Freedom (from harm and predictability) is a biological imperative manifesting itself as stochastic responsiveness. Dunbar, for example, writes that “primates are so supremely flexible in their behavior that it is almost meaningless to try to define the ‘typical’ anything for a species” (Dunbar 2001: 176). In Christopher Hyatt’s wording, “WHAT we do is determined, HOW we do it is relative” (Hyatt 2004 [1982]: xxix). This means that the bio-evolutionary imperative (the DNA-biomass mechanism of encoding cognitively responsive structure and form) works side-by-side with purely random, stochastic variation on the level of the gene pool. Variation, for Darwin, was the first stage of speciation. Species (reproducing life forms) arise out of the sea of Varieties (unsustainable life forms). Likewise, genotypically, Action (behaviour) arises out of the sea of Choices (cognitive possibilities). It

seems that life is *twice* a “gamble”: mutation and liberty are its winning cards.

In the words of Bekoff (1995) quoted earlier in the essay: “While general rules of thumb may be laid down genetically during evolution, specific rules of conduct that account for all possible contingencies are too numerous to be hard-wired (Griffin 1984)”. In other words, “completely hardwired behavior would be a recipe for evolutionary disaster” (Dunbar 2001: 183). Genetics is the premise, not the answer. To solely rely on genetic-behavioural models of analysis has been a failure because the limited code of the DNA is simply *a part* of the constructive process of an organism, which relies on selective adaptation for its survival. Such adaptation always involves responsiveness to the environment, and this responsiveness *can* sometimes utilize conditioned (whether through evolution or through individual experience) automated reflexes as reliable safety mechanisms, but even such cognitive responsiveness is “free” to the degree that it has “chosen to be conditioned” (in some silly sense) to operate through a specific Innenwelt-Umwelt feedback loop. Freedom is always freedom to form such signifying loops. Freedom *is* behavioural patterning.

The answer to the question, already studied by some bio- and zoo-semioticians, of how is DNA-RNA-protein semiotic process *possible* in the first place, seems to imply a process of active interpretation, adaptation and variation on the very cellular level itself. Therein research is due. Elsewhere, the adaptive-selective mechanisms of DNA-biomass speciation (that is, variation) on the scale of nervous systems in “higher” *animals* like mammals, birds and reptilians seem to imply a deep consistency of cognitive endowment. In animals, the genetics of the DNA have pre-programmed the presence of cognitive possibilities (“mental choices”) as a *bio-evolutionary imperative*.

Now, the problem of the *emergence* of the “mind as we know it” (the *mammalian, primate* mind) still remains an issue. Here, the role of sexuality, reproduction and coupling in this story is an interesting one, especially since the aesthetic and volitional sensibilities of many

animals are heightened during periods of heat, mating and pair bonding. At any rate, the various cognitive pathways to action, the various mental processes (that is, various Innenwelt-Umwelt cycles of interchange of signs) and the various physical responses found in the animal kingdom, from rats to humans, have been well documented in the relevant ethological literature. The community interpretation has simply been strongly biased against any perceived human-animal “fraternizing”. But empirical evidence has already proven the *qualitative* question (of animal cognition); what it can do is update the *quantitative* reservoir of knowledge (about *kinds of* animal cognition), and about our own special evolutionary history.

The overturning of “anthropologocentrism” (man-language-centrism) should result in the wider acceptance of the principle of kingdom-universal freedom (variation), of which a special case is species-specific freedom (mental processing). The field of cognitive studies suffers tremendously from being relegated to being a part of anthropology. By subjecting all life forms to a cognitive-behavioural analysis of minds-in-action, we may elucidate what folk psychology calls “mental liberty” and what Uexküll termed Innenwelt’s capacity for active world-construction. What we should be looking for in observation are signs of active-constructive-interpretative “free responsiveness” (the presence of “unpredictability”) in animal behaviour. Thus far, the observations and theories of scholars in the tradition of Charles Darwin (whose work should be seen as *conducive* rather than *antagonistic* to biological cognitivism), Jakob and Thure von Uexküll, Karl von Frisch, Marc Bekoff, Jane Goodall, Dario Martinelli, Jesper Hoffmeyer and Kalevi Kull seem already to point in the direction that it is indeed rather more “*economical or parsimonious*” (Bekoff 1995) to presuppose the presence of zoo-cognitivism, Innenwelt-action/activity, free will and “intentional” sign-processing, that is, bio-metabolistic semiosis, in animals and probably across all levels of biosphere (although this universal dimension lies beyond the present study). There is a gradation from lower order animals to higher order animals. Minds

come in different “shapes and sizes”. Things like cognition, intuition and free will are always, to be sure, limited — but then *all* free will is limited, including human free will. Or prove me wrong: please “decide” to stop breathing now, for ten minutes... Well? I rest my case.

The next step is to embrace this emerging empirical reality and to realize that to hold fast to old preconceptions, let alone to *debate* them with all seriousness, is to give erroneous and outdated philosophy undeserved publicity. The principle of biospherical *continuity*, implicit in the concept of the Umwelt and actually already in Darwin’s idea of Species (defined as *naturally selected variation*), if accepted, would facilitate both academic understanding and fieldwork observatory accuracy of ethological data. It might also possibly give rise to improved understanding (because rooted in evolutionary data) of human cognitive skills, as well as answer, or at least reformulate, the philosophical issue of *freedom* and *choice-making*, now definable as a biotic imperative for variation (in genotype) and cognition (in phenotype), rooted in the DNA encoding/decoding sign processes of structuration, individuation and speciation.

## **7. Conclusion: Life in the human zoo... and breaking out of the cage**

To use Fentress’ metaphor, each way of categorizing behaviour is a *window* on the behaviour of the other, and from each *window* there is a different view... (Bekoff, Jamieson 1990: 3; my italics).

We must continue, over the years, to observe, record and interpret. We have already learnt much. Gradually, as more people work together and pool their information *we are raising the blind of the window* through which, one day, we shall be able to see *even more clearly* into the mind of the chimpanzee... (Goodall 1990: 11; my italics)

These metaphors of Goodall and Fentress should make us think of all the windows we are opening and closing on a daily basis. Let us summarize our position up until now. We have proposed the unity of behaviorism and cognitivism. This implies *minding* animals (see Bekoff 2002) as much as *animalizing* minds. The theory of zoo-cognitivism (a word that should not be confused with the anthropo-centric practice of looking for “human-like” traits in animals) implies the presence, in each species, of some Umwelt specific inner world. We humans, as language-users, utilize our freedom to operate in our modelling system (spoken and written language, semiotic coding, etc...), oftentimes, to enhance, magnify, explain and justify our own advantageous position in relation to those outside our system — that is, the barbaric, illiterate, un-semiotic, irrational, illogical, non-psychoic, non-egoic and unfree (non-cognitive) Other. Selfishness, you see, is one of the ingrained properties of not only individuals but gene pools (cf. Dawkins’s metaphor of “The Selfish Gene”) and even our modelling systems. Selfishness implies love of the in-group but also lack of love for the out-group. Human semiotic systems (such as our spoken language), as human modelling systems, are designed for the evolutionary purpose of self-justification. Language aims to establish a contented (pacified and civilized) and normalized (individuated and associated) *in-group*. In ethological study, the “descriptive bias” forces a naturally dissymmetrical relationship between the Scientist and the Animal. This rift has been unduly magnified by the prevalent popularity of the partially overlapping Judeo-Christian and Cartesian traditions.

Even in the absence of great metaphysical theories, old assumptions die hard. We are, after all, social animals, destined to speak among ourselves, with suspicion, about strangers and foreigners. Any rumours of our *own* “exogenous” ancestry are treated with ridicule and shock.

Human are, in Desmond Morris’s words, *naked apes*. This does not, however, mean that we are “conditioned” in our biological deter-

minism — let alone that we should follow some imaginary “biological morality” (Morris 1967: 87) — but that we, like all animals, are DNA-tailored to respond *cognitively* (of which human-level consciousness is a particularly complex form) to ranging stimuli. If cognition can be quantized (as I believe it can, relating to “levels of consciousness” correlating to the emerging complexity of central nervous systems and brain structures in animals, primates and humans), then humans are perhaps *more* free and *more* cognizant (and I shall emphasize, *perhaps*) than any other animal on the planet. But quantity is the key here: the development of the animal mind, up the mammalian, primate and hominid branches, all the way to *Homo I-Podiensis* (or, if you insist, *Homo Sapiens*), is a fuzzy and uncertain mountain climb, a long-winded uphill battle up (what Richard Dawkins has called) “the Mount Improbable” — up the evolutionary tree of emerging structures of cognitive capacity.

Without the interplay of (*stochastic*) *phylogenetic variation* and (*free*) *ontogenetic cognition*, evolution would stop. Evolution implies a wide variety of cognition; cognition in *fauna* is not (always or necessarily) “human mind”-like. It is Umwelt-specific. This might beg the question: why use the term “mind” *at all* for so many different kinds of biological solutions? I think it simply happens to be the best word available, most universally applicable, and I *do* mean it to be taken *literally*. Animals really have minds. This can be explained evolutionarily, as the result of adaptive pressures. Freedom is the means whereby the selfish gene reproduces itself. The plurality of reproductively advantageous variations on the level of evolution, pinpointed by Darwin, is correlated on the level of individual minds as the plurality of behavioural patterns (“ethological data”) and modelling systems (“languages”) caused by the free internal operability of signs (the “freedom of choice”).

Animals live, breathe and think. Q.E.D.

It certainly *seems* that way. And that, for many of us, is reasonable and sufficient grounds for behaving in accordance with that pragmatic

realization, despite the best exercises in “paper doubt” (as Peirce snubbed the practice) by skeptical philosophers. After all, are we to study life from the dead angle of self-congratulatory “arm chair” mental gymnastics or rather from the perspective of our natural intuition and scientific understanding?

For the future, let us hope that cognition becomes a thing like any other, subject to behavioural and empirical verification, without the sort of metaphysical juggling that we see today.

## References

- Bekoff, Marc 1995. Cognitive ethology and the explanation of nonhuman animal behavior. In: Meyer, J. A.; Roitblat, H. L. (eds.), *Comparative Approaches to Cognitive Science*. Cambridge: The MIT Press, 119–150.
- 2002. *Minding Animals: Emotions, Awareness and Heart*. Oxford, New York: Oxford University Press.
- Bekoff, Marc; Jamieson, Dale (eds.) 1990. *Interpretation and Explanation in the Study of Animal Behavior. Vol. 1: Interpretation, Intentionality, and Communication*. Boulder, San Francisco, Oxford: Westview Press Inc.
- Bernstein, Irwin S. 1990. An idiosyncratic approach to the study of relationships. In: Bekoff, Jamieson 1990: 35–55.
- Byrne W. Richard 2001. Social and technical forms of primate intelligence. In: de Waal (ed.) 2001: 145–172.
- Darwin, Charles 1871. *The Descent of Man, and Selection in Relation to Sex*. [2<sup>nd</sup> Edition] London: J. Murray.
- Deely, John 2001. Umwelt. *Semiotica* 134(1/4): 125–135. [Ed. Kull, Kalevi]
- Dunbar, Robin I. M. 2001. *Brain on Two Legs*. In: de Waal (ed.) 2001: 175–191.
- Dupré, John 1990. The mental lives of nonhuman *animals*. In: Bekoff, Jamieson 1990: 428–448.
- Fentress, John C. 1990. The categorization of behavior. In: Bekoff, Jamieson 1990: 7–34.
- Feyerabend, Paul 1975. *Against Method*. London: Verso.
- Fisher, John Andrew 1990. *The Myth of Anthropomorphism*. In: Bekoff, Jamieson 1990: 96–116.
- Frisch, Karl von 1974. *Animal Architecture*. New York: Harcourt Brace Jovanovich. [With the collaboration of Otto von Frisch]

- Goodall, Jane 1990. *Through a Window: My Thirty Years with the Chimpanzees of Gombe*. Boston: Houghton Mifflin Company.
- Griffin, Donald R. 1990. Foreword. In: Bekoff, Jamieson 1990: xiii-xix.
- Hyatt, Christopher 2004 [1982]. *Undoing Yourself*. Tempe: New Falcon Publications.
- Kuhn, Thomas 1964. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Martinelli, Dario 2007. *Zoosemiotics: Proposals for a Handbook*. Acta Semiotica Fennica 26. Imatra, Helsinki: ISI.
- Mettrie, Julien Offray de la 1748. *Man a Machine*. (Available online at: [www.cscs.umich.edu/~crshalizi/LaMettrie/Machine](http://www.cscs.umich.edu/~crshalizi/LaMettrie/Machine).)
- Morris, Desmond 1967. *The Naked Ape*. London: Corgi Books.
- 1982. *The Pocket Guide to Manwatching*. London: Triad Grafta Books.
- Nagel, Thomas 1974. What is it like to be a bat? *Philosophical Review* 83(4, October): 435–50.
- Pusey, Anne E. 2001. Of genes and apes: Chimpanzee social organization and reproduction. In: Waal, F. B. M. de (ed.) 2001: 9–38.
- Rorty, Richard 1980. *Philosophy and the Mirror of Nature*. Princeton: Princeton University Press.
- Sebeok, Thomas 1981. *The Play of Musement*. Bloomington: Indiana University Press.
- Snowdon, Charles D. 2001. *From Primate Communication to Human Language*. In: Waal, F. B. M. de (ed.) 2001: 195–227.
- Waal, Frans B. M. de 2001. Apes from Venus: Bonobos and human social evolution. In: Waal, F. B. M. de (ed.) *Tree of Origin: What Primate Behavior Can Tell Us about Human Social Evolution*. Cambridge: Harvard University Press, 39–68.
- (ed.) 2001. *Tree of Origin: What Primate Behavior Can Tell Us about Human Social Evolution*. Cambridge: Harvard University Press.

### **ИЗУЧАЯ КОГНИТИВНОСТЬ ЖИВОТНЫХ: ЭПИСТЕМОЛОГИЯ, ЭТОЛОГИЯ И ЭТИКА**

Вопрос о когнитивных способностях животных является объектом ожесточенных споров в научном мире на протяжении двух последних десятилетий (напр. в рамках когнитивной этологии и бихевиоризма) и, на самом деле, в течение всей длинной истории натурфилософии.

софии (начиная от Платона и Аристотеля и — через Декарта — вплоть до Дарвина). На пути научных разысканий эмпирического и эволюционного объяснения возникновения и развития познавательной способности/когнитивных способностей встречалось множество философских споров, тупиков и эпистемологической растерянности. Я утверждаю, что тут мы имеем дело не только с противостоящими друг другу парадигмами эмпирических исследований, но и с конфликтующими философскими мировоззрениями. После рассмотрения нескольких наиболее часто встречающихся идейных конфликтов на основе примеров из исследований животных я заявляю (в строго дарвинистском духе), что когнитивные способности в природе характеризуются непрерывными и плавными переходами, которые возникают в ходе естественного отбора вариативных форм. Правда о поведении и когнитивных способностях животных находится где-то посередине между двумя мифами — мифа о «свободном» человеке и мифа о животных с «запрограммированным поведением». В конце я надеюсь немного разъяснить те глубокие философские проблемы (и многие псевдопроблемы), которые заводят в тупик и дезориентируют как обычных людей, так и философов и ученых в их стремлении к знанию о природе.

### **Loomade kognitiivsust uurides: epistemoloogia, etoloogia ja eetika**

Küsimus loomade kognitiivsetest võimetest on olnud teadusilmas vihase vaidluse objektiks paar viimast aastakümnet (näiteks kognitiivse etoloogia ja biheiviorismi raames) ja õigupoolest kogu loodusfilosoofia pika ajaloo vältel (Platonist ja Aristotelesest Descartes'i kaudu Darwinini välja). Tunnetuse tekke ja arengu empiirilise ning evolutsioonilise seletuse teaduslike otsingute teel on ette tulnud rohkesti filosoofilisi vastuväiteid, tupidakte ja epistemoloogilist nõutust. Väidan, et tegemist on mitte ainult vastandlike empiiriliste uuringute paradigmadega, vaid ka vastandlike filosoofiliste maailmavaadetega. Peale sageliesinevamate ideekonfliktide käsitlemist mõningate vastavateemalistest loomauuringutest pärinevate

näidete põhjal, pakun rangelt darwinistlikus vaimus välja, et kognitiivseid võimeid iseloomustab looduses teatud pidevus ja sujuv üleminek, mis tavalteb tekkida kohastunud teisendvormide loodusliku valiku käigus. Tõde loomade käitumisest ja tunnetusest asub kusagil kahe müüdi — müüdi “vabast” inimesest ja “etteprogrammeeritud käitumisega” loomade müüdi — vahepeal. Lõpetuseks loodan tuua mõningat leevendust neile sügavatele filosoofilistele probleemidele (ja paljudele pseudoprobleemidele), mis painavad ja hämmastavad nii tavainimesi, teadlasi kui filosoofe nende püüdlustes teadmiste poole looduse kohta.