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Humans are apes, only they know.

(Commentary to Jill Byrnnit: Primate theory of mind: A state-of-the-art review)

I find Jill Byrnnit's comprehensive review on the *Primate Theory of Mind* excellent and highly enlightening. But why are we fascinated by studies of the ape's mentality? Most likely because we believe that we see our archetype in the faces of the apes. "The question is this – Is man an ape or an angel?", said the concerned Benjamin Disraeli, and sided with the angels. Disraeli can hardly be blamed; as recognized since the dawn of humankind, the human species does indisputably seem to be very different from even the most advanced animals. Then again, the theory of evolution, which triggered Disraeli's question, just as indisputably seems to show that we have evolved from primate stock as the apes' brighter cousin. In scientific quarters, at least, the angel had to go. However, this did not resolve the issue of the glaring difference. In fact, it divided Alfred Russell Wallace and Charles Darwin, who jointly in 1858 had the theory of evolution presented before the Linnean Society of London. Wallace later expressed the difference like this:

"On this great problem the belief and teaching of Darwin was...that there was no difference in kind between man's nature and animal nature, but only one of degree. My view, on the other hand, was and is, that there is a difference in kind..." (Wallace 1905)

In a sense Wallace wanted to eat his cake and have it - his and Darwin's theory of evolution was a corollary to George Lyell's geological uniformitarianism and demanded gradualism. I think that Wallace was right. *To eat your cake and have it* is the name of the game if you want to understand human evolution, but unfortunately, as every subsequent discussion in the field proves, it is not an easy feat. Wallace's own attempt to explain the appearance of a difference in kind amidst a gradual evolution is certainly best kept secret. Taking a clue from the boiling point of water, a hearty attempt was made by others to claim that "gradual addition" in itself leads to a difference in kind, thus Sir Arthur Keith, England's leading anthropologist, claimed that if the ape's brain volume grows to 750 cc, it crosses a Rubicon to become the human mind. I shall say no more. Darwin, of course, had a challenge no less difficult: To refute a difference in kind, he had to find "gradual slices" to fill in the obvious gap between man and beast. Devoted to this rather unpromising task, Darwin's *Descent of Man* from 1871 is amusing reading.

Inevitably, The Primate Theory of Mind research belongs under the sway of the two attractors - *Degree* and *Kind* - and is bound to end up in either grove. If there is no ape theory of mind it is certainly a difference in kind and a point to

Wallace. If, however, you can show that apes have a theory of mind, perhaps theories of mind to some lesser degree, it is a point in Darwin's favour. Now it is only human that you want to find something when you go in search of something; negative outcomes only rate as positive in textbooks on methodology. The research under review is therefore bound to be biased towards finding primate theories of mind to a greater or lesser degree. Byrnnit's conclusion confirms this prediction:

"Humans seem to be considerably more extensive [sic!] "mind-readers" than non-human primates and animals...[However] viewing theory of mind as a cognitive entity that is either present or absent is not a particularly productive approach [sic!]. Rather, theory of mind is better seen as a complex conglomerate...This may happen at different levels of abstraction and may take different avenues in different primate species concerning what kind of mental states "theories" we entertain (p. 40-41)."

Seen from the other grove, this seems a lame conclusion which dodges the decisive issue: The difference in kind. Then again, evolution is also gradual, humans are of ape origins, there are deep similarities and connecting steps and the study of these is of great scientific importance. The Primate Theory of Mind research may fall in with the *Descent of Man*, but this time around it is not telltale and anecdotes but high quality empirical research. I am duly impressed, and have neither reason nor qualifications to be critical. Still this point is valid: From the outset this research is very unlikely to report a difference in kind. To give the "angel" a voice too is the purpose here.

The con of human consciousness

As a definition of *Homo sapiens* in his *Systema Natura*, Carl von Linné merely wrote: "Know Thyself". It may have been a sly way to get around a difficult task (the same words crowned the entrance of the rather cunning Oracle in Delphi). Still, inadvertently or not, Linné was right on the mark. According to a very long tradition, self-knowledge – or, as first found in lines by Sappho of Lesbos, *con-scious*: I know with myself – has been considered the defining mark of the human being. Humans have consciousness, animals have not.

Of course, historically, this distinction has been very badly handled. By using the term consciousness for both sentience and human thinking, animals, lacking the latter, have routinely been denied the former, as if they were anaesthetized zombies. To avoid such equivocal rubbish, and to regain for the animals their proper senses and faculties, at least you need these distinctions. In evolutionary order:

1. Sentience (qualia and Nagel-like presence, setting up the now of the present moment: possibly a physical property of all living things).
2. Intentionality (Brentano-like aboutness, the object-defined temporal/spatial horizon of locomotion, setting up the future: all animals).
3. Mind (episodic memory as basis of decision-making and problem solving, setting up the past: mammalian species).
4. Consciousness (something extra, specific and unique for human beings).

This sequence grants mammals not only sentience and intentionality but mind as well. In the case of primates this feels justified. Some may argue about cats and dogs, but it seems unreasonable and unempirical to deny a mind of their own to such illustrious fellow-primates as Köhler's Sultan with his sticks and boxes, the Gardner's sign-brandishing Washoe, Imo, the rice-collecting macaque-girl-genius from Yakushima (my personal favourite), or all Jane Goodall's little rascals and bullies from Gombe. Neither we doubt that they are quite able to assess the intentions of their fellows. The issue should not be whether these our friends have a mind (and a degree of intention-reading) but whether they have a *theory of mind* in a stricter sense.

Taking this route, my (heavy-handed) summary of Byrnett's review would go like this: After a promising and enthusiastic beginning, the research on a primate theory of mind is in limbo because without invoking language it seems impossible to distinguish mind-reading proper from clever behaviour-reading of intentions (it seems to me that Byrnett lets them slide into each other). By invoking language (that is by asking them) you can be certain that humans have acquired a theory of mind by the age of four. Seemingly, until that age behaviour-reading of intentions is all they have. Since you cannot ask the non-human primates, you have to employ ingenious setups, but even the most ingenious (and they truly are) do not allow you to say: This is mind-reading and not merely clever behaviour-reading of intentions.

So, if you conclude, fully consistent with the experiments, that humans acquire a theory of mind while non-human primates do not, you commit a methodological error. When asking the children and not the macaques and the chimps, you treat the human and the non-human primates differently and cannot compare, or conclude from, the outcomes. This, of course, would be the sober (and boring) decision, but suppose that instead of a methodological flaw the very enigma of the human being is facing us in these experiments.

As Byrnett recounts, the term *theory of mind* may sound awkward and pompous to many ears; one wonders

whether 'concept of mind' would have been the better choice. But no sooner is this thought expressed than the whole issue unfolds in the most intriguing way.

The Concept of Mind is the title of Gilbert Ryle's famous 1949 denunciation of 'the ghost in the machine'; i.e. the soul-body dualism (of Descartes and every other contemporary, including Locke), in favour of a behaviouristic account. Translated into Byrnett's context, Ryle's position would be that for humans and non-humans alike there is only behaviour-reading, mind reading is a mistake. What kind of mistake? Basically, Ryle argues that the concept of mind is a category mistake produced from the tendency of language to double what it talks about, and the concept of mind is an artificial product of objectifying language. If, for instance, I say that I know, this knowing is likely to pop up as 'knowledge', which becomes the object of my knowing, and this doubling will allow me to say that I know my knowledge, or that I know that I know. Vacuous, confusing, even contradictory statements do certainly abound from this doubling; it is not without merit that English logicians like Bertrand Russell and ordinary language philosophers like Ryle went on a sanitizing spree. Here was – as put by Ludwig Wittgenstein, following in the wake of Ryle and overtaking him – a fly to let out of the fly-bottle.

Warnings against the confusions of hypostatization (i.e. the objectifying doubling inherent in referential language) have, of course, been classroom routine ever since Ockham. Still you may wonder about the true nature of Ryle's mistake. Descartes' dualistic terminology of soul and body does not change the fact that his double entry *I know that I know* is a genuine psychological phenomenon, and exactly the same as Sappho's *I know with myself*. This (literal) *con-sciousness* is a real phenomenon; the doubling *con* may be a mystery, but it is not a fraud, and it seems ill-conceived to try to reduce it to behaviourism. Here is a fly which must be understood in its bottle or not at all.

To me this is the crux of the matter presented by Byrnett. Theory of mind is just a step from ordinary consciousness: (1) I know that I know; (2) I know that (and what) *you* know. (Most likely the order in ontogenesis is the reverse). The conclusion of the experiments seems clear: Only humans (from the age of four) have it, apes do not. The complication is this: Only verbal communication allows the distinction to be made between the concept of mind and clever behaviour-reading. Apes have vocal communication, they do not have verbal, i.e. linguistic communication. Thus – and this would be Ryle's contention – the concept of mind could be a (artificial and accidental) product of language. Certainly, but what then is language, since it can wield this magic wand? The best answer at hand would be something like this: Language is a signal system which differs from the animal signal systems by having some extraordinary referential properties. While the systems of the animals are here-and-now context bound, human language is context bound *and not*. Human language has a dual nature, like consciousness. In fact, language is probably nothing but a signal system turned conscious! We find the ethereal duality of consciousness in our concepts, in the unity of the universal and the particular, in the unity of the subjective and the objective, and in the duality

of the metaphor; it is the essence of poetry, jokes, and humour; it preys upon our self-awareness; and we find it everywhere. In short, Linné's distinctive mark *Know Thyself!* is the essence – promise, and ban – of being human, but how did this unique knowledge come about?

Our best – uncannily best – delivered account is the story of Eve providing Adam with fruit from the tree of knowledge, which – pling! – made these naïves self-aware and drove them out of nature's garden into the trying human existence. I truly believe this is what actually happened in the first formation of the human being. The gist of my own account of anthropogenesis is that in a particular critical ecological situation in Africa some million years ago, members of an anthropoid tribe were able to resolve the crisis by incorporating a natural contradiction, which – as a spin-off – introduced dual consciousness, language, human thought, and a human society based on the duality of gender (Eves providing Adams with vegetable food, in fact).¹

What you want for your thesis is that it is refutable and not refuted. If it is refutable it belongs to good Popperian science; if it is not refuted it may be right. This gives me two reasons to welcome Byrnie's review. The research recounted is the kind of research that could potentially refute my thesis. If chimps have a concept of mind equal to ours, our dual consciousness would not be uniquely human, and my account would be wrong. But it seems they don't, which is supported by the thesis. Or at least you cannot ascertain that they have without invoking language, which is impossible. This again could be counted in favour of the thesis, which identifies consciousness, language, and the human being.

I am jesting, of course, in the real world only positive results count. The *enculturation of apes* recounted by Byrnie is, however, a positive and extremely helpful result.

The handing down of the human spark

Assuming that the origin of the theory of mind is explained by Adam and Eve, we are still left with a sore problem. How is it transmitted to their children, and why do the children have to wait till they are four years old?

There seems to be four ways each of us could have acquired the Adam and Eve mark.

1. It is inborn: We carry it in our genes.
2. It is learned by experience.
3. Culture has taught us.
4. As an existential revelation, discovery or choice.

The last is a reference to Søren Kierkegaard, I couldn't resist. His whole philosophy is about the transmission of the Adam and Eve mark – *original sin*, he called it. (The

connection between human consciousness and original sin is not farfetched). Kierkegaard said: It is inborn; we do experience it; it is conceptualized in Sunday school; *but* it still takes something extra to be authentic, i.e. truly human. This may be. The important thing to note here is that none of the ways exclude the others, in fact, they may work in unison.

New attributes to be acquired by an individual are either handed down by genes (1), learned (2), handed down by culture (3) or discovered (4). Genes and culture are the trans-generational vehicles of transmission. Note the natural order of appearance. The relative merit of genes and culture – nature or nurture – is, of course, a big issue in the reviewed research, but the relation between genes and individual behaviour change also merits attention.

You can have no kind of life without genes. However, genes specify behaviour to different degrees. Some animals are specialists in some particular trade with expert qualifications honed to the level of instinct and reflex. Other animals are jack-of-all-trades-types with general competence, but no special skills; open and loose, the generalists have to be adaptable learners. You may call that a qualification, but Mother Nature does not. The competitive logic of natural selection works to turn generalists into specialists. Darwin mentions a Canadian bear skimming-plankton-while-swimming and suggests that its progeny would turn into whales were they to continue this rather idiosyncratic way of life. Any supportive genetic mutation would be favoured until the bear found itself endowed with flippers and a mouthful of baleen. This would be the transformation of a dilettante bear-whale into a specialist expert whale. Observe also how living behaviour is here the pathfinder of organic evolution, even if acquired characteristics are not directly inherited but fixed by way of mutations and natural selection. Note the order. Darwin's example is credible; the opposite notion that a sudden mutative appearance of whalebone in its mouth drove the bear to look for plankton is not.

When embarked upon, the Adam and Eve strategy would, of course, have been subjected to the same process of genetic fixation. In the beginning was the word, yes, but next followed natural selection in support, remodelling throat and brain to exploit the potential of the new way of life. For centuries the growth and development of the human brain has been considered *the* answer to the enigma of the human origins. It is not. Adam and Eve are, as they came first. Like baleen, brains are after the fact. They are the organic functions selected bit by bit to prop up, reinforce, and propel a new kind of living, which explains the interplay between kind and degree in evolution. The ruling tendency has been to place the cart before the horse, but if you get the order of appearance right, brains are, of course, enlightening narratives of human evolution.

As long as the world is stable, generalists become the losers of evolution, being routinely run off by specialists. However, when, occasionally, the world tumbles, leaving their expert skills homeless, the specialists are placed in great jeopardy. This is why the more cataclysmic events in Earth history were followed by mass extinctions. Every time, however, luckily, some not too clever type from the back of the class would survive and carry on. Thus, terrestrial animals

¹ For a comprehensive but popular account of my Adam and Eve thesis and the history of paleo-anthropology see *The Anthropogenesis*, an animated power-point series found on www.psy.ku.dk/engelsted.

evolved from the least expert of the fishes, and when a loose comet brought the reign of the super expert dinosaurs to an end, it was the small generalist mammal that finally got its chance and started its own race towards expert distinction. We stem from the slowest in this race: the generalist primates, and, of course, we pride ourselves on being the most flexible, adaptable, inventive, and creative of all.

Assuming that Adam and Eve became humans by some extraordinary behavioural event and not a mutation, their newborn children would still be monkeys. So how was humanity passed on to them? The answer is obviously that it must have been passed on by example. That is, some sort of behaviour, situation, or setup must have facilitated the transfer of the new property. Such non-genetic transmission is called culture. In order to make sense, cultural transmission requires an open and adaptable genetic make-up. Culture is for generalists, not for specialists. Frogs and koala bears don't have it much, chimpanzees do. Being small chimpanzees, Adam and Eve's children would have been well prepared for it. This means that present-day chimpanzees – placed in a similar cultural setting – should be able to embark upon the human way. The primate research reviewed by Byrmit proves that they do!!! She writes: "*Individuals [of great apes] who had been raised in intimate and extensive contact with humans and human culture...unanimously displayed more complex levels of cognition (p. 29)*". This is a great positive result. It was not to be expected, of course, that great ape children would reach the capability of the human child, who for a million years had natural selection prepare its brain with modules to receive the human mark; but placing apes in a human setting should make a mental dent at least, otherwise it would be hard to explain how the human plane got off the ground in the first place.

But it gets even better. Byrmit:

"Call and Tomasello (1996) place great emphasis on the role of joint attention in the enculturation process and suggest that during the upbringing of great ape individuals in human cultural environments, their human caretakers structure and encourage triadic interactions in all kinds of manners like they would with human children (p. 29)."

Right! Bravo! I am certain that if there is a magic wand, the shared attention of a triadic interaction (person-person-object) is it. Being humans, we take this vehicle of human culture for a simple and given thing, but the depth of this relationship should not be underestimated. It is probably here we shall find the source of the mysterious con, and some day when finally understood, I have no doubt that it will prove an essential piece of our human kind.

When the girl gorilla Koko, on loan from Stanford Zoo, reached sexual maturity and her owner wanted her back for breeding purposes, Penny Patterson, who had raised her, raged: "To take her away from her family, her environment, to throw her in a zoo cage with a bunch of gorillas – it could kill her." In abolitionist days in America, it was argued that possessors of the human spark could not be treated as chattel; property rights have to yield to human rights. Now a case was

prepared arguing this in favour of Koko. After Koko and Patterson had made an appeal on the Johnny Carson TV Show, Rolex ransomed the gorilla from and saved the day, so the case was never tried in court. So did Koko have a human spark? The question is not meaningless. Anthropoid apes cannot be force-marched, but given the proper cultural environment and time for mutations to catch up, they could enter the full human being, maybe even become existentialists. We did so ourselves.

References

Wallace, A.R., *My Life, A record of Events and Opinions*, Chapman & Hall, London 1905, vol. 2, p. 17.