CHAPTER 2

In Search of Empathy in Prehistoric Times: Evolution and Revolution

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Abstract

Empathy is normally defined as the psychological identification with the feelings, thoughts or attitudes of another. Stated differently, empathy is the ability to understand what another person is experiencing and put oneself in someone else's position. This contribution attempts to be a reflection on the evolutionary and 'revolutionary' role of empathy in human evolution by paying attention to the conditions of possibility and the presence of empathic behaviours in pre-*sapiens*' prehistory. On the basis of the knowledge provided by specialists in multiple disciplines such as neuropaleontology, prehistoric ethnology, psychology and philosophical anthropology, we will first establish how different levels of empathy were possible in our ancestors as cognitive and social complexity was gradually developed over time and which factors were responsible for and made possible our current ability to empathise. Following from the above, we will address the understanding of the biological and sociological evolutionary function of empathy, that is to say, what was – or/and is – the role of empathy in the evolution towards the species *Homo sapiens*. The aim of this exercise is not only to get to know more about the nature of empathy and its anthropogenesis but to show that the role of empathy in our global time remains the same in evolutionary terms, i.e., to promote both the mutual understanding and cooperation necessary for the prosperity of peoples and the realisation of private interests.

Keywords

anthropogenesis – consciousness – empathy – *Homo sapiens* – human evolution – language – paleoneurobiology – philosophical anthropology – prehistory – pre-*sapiens* – proto-culture – theory of mind

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 847635.

> I was experiencing empathy and wondering how other people feel and what they're suffering. I never wanted to feel empathy. It's a lot easier to feel alienated. It's easier to be mechanical. It's a challenge for me to try to be human.
>
> BRIAN HUGH WARNER, *Marilyn Manson*[1]

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1 Preparations for the Journey to Prehistoric Empathy

Messinian Age, 7 Ma, our relative Toumaï (*Sahelanthropus tchadensis*) walks along the marshy areas of the current Djurab Desert, Chad. Nomad, semi-bipedal brachiator, of simian appearance … Was the TM 266-01-0606-1 able to empathise? And, if so, for what purpose/s? Could this distant ancestor feel empathy with his peers or even species other than his own?

Not all species are able to empathise or to reach the same level of empathy. It is not the same to perceive the physical (*somatic empathy*) or emotional states of others by *contagion* as to identify with them (*sympathetic concern*), to consciously attend to them (*emotional empathy*), to intentionally put oneself in their shoes (*cognitive empathy*/*perspective-taking*) or to deliberately use empathy for own benefit (*Machiavellian intelligence*).[2] The matter becomes increasingly complicated when we talk about empathy among species.[3] Moreover, even if empathy is possible, it may serve different biological and social purposes in evolutionary terms: from maintaining durable relationships and inhibit aggression to anticipate others' behaviours and avoid cheating. Empathy seems to be part of the life of many species for many reasons. What was/were the case/s of our ancestors? And how can we know about that?

Research in recent years has focused on possible brain, genetic and hormonal processes underlying the experience of empathy[4] and has proved that

1 Ashare, Matt, "Omega Man", in *CMJ New Music Monthly*, no. 64 (1998): 58.

2 Smith, Adam, "Cognitive Empathy and Emotional Empathy in Human Behavior and Evolution", in *The Psychological Record*, vol. 56, no. 1 (2006): 3–21.

3 Bradshaw, John W. S. and Paul, Elizabeth S., "Could Empathy for Animals have been an Adaptation in the Evolution of Homo sapiens?", in *Animal Welfare*, vol. 19, no. 2 (2010): 107–112.

4 Decety, Jean, "The Neuroevolution of Empathy", in *Annals of the New York Academy of Science*, vol. 1231, no. 1 (2011): 35–45; Decety, Jean, *et al.*, "A Neurobehavioral Evolutionary Perspective on the Mechanisms underlying Empathy", in *Progress in Neurobiology*, vol. 98, no. 1 (2012): 38–48.

observing others' states activates some parts of the neuronal network involved in processing such states in oneself.[5] In this regard, fMRI has been employed to investigate the *anatomy* of empathy. However, fMRI is not so useful to understand 'the brains of the past' since they do not fossilise and have to be reproduced by using MRI and PET. Much of this information helps us to know, by comparing past brains with current ones, if our predecessors' brain anatomy were ready for empathy.

Neuropaleontology is just a first stop on the journey to the search for empathy in our ancestors. Thanks to this discipline we know emotional empathy had an earlier phylogenetic origin than cognitive empathy. Even so, it has important limitations. To determine emotional intelligence, so necessary in the evolution of empathy, we need to pay attention to other sources of information: We have to 'see' and 'hear' what our relatives could do, i.e., to make general inferences on the basis of overall archaeological records.[6] Does empathy leave any archaeological trace? Of course, it does. We can search them, for example, on the correlate of their social life: from types of settlements to cave paintings.

Yet, we have to take the leap from physical evidence to plausible reasoning. The question of empathy in prehistoric times does not admit only one, definitive answer. It is perfectly legitimate to offer perspectives, on the basis of our present knowledge, and establish probable connections, dealing with various interpretations at the same time. To reach a meaningful understanding of this topic we can rely on speculations, narrations and other plausible constructions, as long as they do not contradict what the science has proven.[7] This being so, to get to *what could be* when little evidence is available we need our common sense and to empathise with our predecessors. We will play with all these tools to trace the presence and evolution of empathy in pre-*sapiens* and *sapiens*' prehistory. If we agree with the statements of our methodology, i.e., the principle of insufficient reason, then and only then will we be ready to progress through this journey.

Before doing that, let me record that we will work with the slightly modified definition of empathy by de Waal and Preston, as a form of intersubjectivity in

5 Lamm, Claus; Batson, Daniel and Decety, Jean, "The Neural Substrate of Human Empathy: Effects of Perspective-taking and Cognitive Appraisal", in *Journal of Cognitive Neuroscience*, vol. 19, no. 1 (2007): 42–58.

6 Holloway, Ralph, "Evidence for POT Expansion in early Homo: a Pretty Theory with Ugly (or no) Paleoneurological Facts", in *Behavioral and Brain Sciences*, no. 18 (1995): 191–193.

7 *vid.* Kant AA VIII: 109. Critical Edition of Kant's works is quoted according to the *Akademische Ausgabe* by volume (8) and page (109). Indications to authors in this sense are online in *Kant Forschungsstelle* (Mainz Universität, http://www.kant-gesellschaft.de/de/ks/Hinweise_Autoren_2018.pdf. Viewed on the 18th November 2018).

which the observer participates in the feelings of the other at different degrees as a result of a combination of evolutionary ancient emotional responses and more recent anatomical and neurological innovations unique to primates and highly refined in human beings.[8] Among the many levels of empathy and processes associated to it,[9] we will focus on the 'road' from the 'bottom-up' (contagion to Machiavellian intelligence) to draw the evolution of this ability. We will pay attention firstly to the most ancient phylogenetically empathic states to move towards more complex forms of empathy that also include the former, rudimentary levels of empathy – take in mind the image of a Russian doll.[10]

2 Reading the Signs of Empathy

*From Contagion to Emotional Empathy in Pre-*Homo *Species*

The abovementioned ethnologist and biologist, de Waal, claimed that human beings, apes, elephants and dolphins were the most capable species for high degrees of empathy.[11] However, many other species can experience more primitive levels of empathy related to emotional contagion (same state as a result of observing other's state), sympathy (sorry and care for) or emotional empathy (attended, conscious perception of others' states). If Toumaï was on the borderline between apes and humans it is reasonable to think that he experienced some degree of empathy with other apes, and even with those monkeys with which he had shared so much, so long ago. But which one?

Much depends on his little brain. It was only 350 cm^3, similar to that of modern chimpanzees. Despite its size, Toumaï's brain showed clear allometric trends in the white matter[12] translated into cerebral specialisations.[13] His brain concentrated high levels of cerebral tissue in its frontal lobes. Although little

8 Preston, Stephanie D. and De Waal, Frans, B. M., "The Communication of Emotions and the Possibility of Empathy in Animals", in *Altruistic love: Science, Philosophy, and Religion in Dialogue*, edited by Stephen G. Post, *et al.* (Oxford: Oxford University Press, 2002), 284–308.

9 *vid.* Table 2 in Preston and De Waal, "Empathy", 3.

10 De Waal, Frans B. M., "Putting the Altruism Back into Altruism: the Evolution of Empathy", in *Annual Review of Psychology*, no. 59 (2008): 279.

11 De Waal, Frans B. M., *The Age of Empathy: Nature's Lessons for a Kinder Society* (New York: Harmony Books, 2009).

12 Arsuaga, Juan L. and Martínez Mendizábal, Ignacio, *Chosen Species: The Long March of Human Evolution* (Marblehead: Wiley & Sons, 2011).

13 Arsuaga, Juan L. and Martín-Loeches, Manuel, *El sello indeleble. Pasado, presente y futuro del ser humano* (Barcelona: Random House, 2013).

or nothing is known about the impact those modifications had on this specimen in terms of empathy, it has been widely recognised that all these changes were decisive for Toumaï to go from emotional contagion to some degree of sympathy.

A brain capable of withstanding the heavyweight of further emotional empathic behaviours must be equipped with a complex network of cells whose activity enables high levels of consciousness and *recursion* or *intentionality* – at least a second level to be able to pay attention to the own perception of others' states. Not to talk of cognitive empathy, which requires a Theory of Mind (mind-reading capacity) to interpret the intention of others and predict their behaviours.[14] This is not exactly the case of Toumaï. He could have a minimum degree of recursion that together with the possibility of possessing VEN S[15] puts us on the track that this ancestor was somewhat empathic by contagion or sympathy. *Sahelanthropus tchadensis*' brain was prepared for social complexity and rapid computation of social information. He had a minimal degree of self-consciousness, a capacity for causal inferences, a certain degree of social inhibition and kind of social specialisation.[16] Despite being able to show some signs of empathy, this specimen would neither have shown a fully fledged ToM nor self-consciousness. What about his successors?

Much has been said about the possibility that the following hominid in the line is *Orrorin tugenensis* (6,1-5,7 Ma). The *Millenium ancestor* must be like their very predecessors. However, the fact that no single piece of the skull has been found makes it difficult to speculate about their brain ability, perhaps a little bit more evolved than Toumaï's one, as well as their capacity for empathy. Besides that, Orrorin is thought to be a potential ancestor of *Ardipithecus kadabba* (5,8 Ma), a relative about whom much more can be said.

A comparison between *kadabba*'s skulls and those from their ancestors reveals that their brain underwent changes. All the same, such physiological changes could not result in a more empathic creature on their own. Nevertheless, paleontologists explain that this specimen had a quite stable life in small groups in which their members did not have too many conflicts but cooperated

14 Seyfarth, Robert M. and Chaney, Dorothy L., "Affiliation, Empathy, and the Origins of Theory of Mind", in *Proceedings of the National Academy of Sciences*, vol. 110, no. 2 (2013): 10349–10356; Dunbar, Robin, *Gossip, Grooming and the Evolution of Language* (Cambridge: Harvard University Press, 1998).

15 Allman, John, *et al.*, "The von Economo Neurons in Frontoinsular and Anterior Cingulate Cortex in Great Apes and Humans", in *Brain Structure and Function*, no. 214 (2010): 495–517.

16 Arsuaga and Martín-Loeches, *El sello indeleble*, 210.

with each other.[17] In this sense, according to the statement that they had a glimmer of proto-culture, maybe a higher level of empathy was responsible for promoting cooperation instead of confrontation.

Kadabba's immediate successor, *Ardipithecus ramidus* (4,4 Ma), was also described as 'relatively peaceful.'[18] But, besides that, *Ardi* was a faster learner. The HAR1F gene, responsible for brain development during pregnancy and formation of new synaptic connections during adulthood, was promoting an accelerated evolution. Additionally, the CaMK2 gene, related to synaptic plasticity and transmission, began to get more presence in their brains.[19] This all contributed to the expansion of the neocortex over time to an extent that Ardi's congeners were capable for an emerging, incipient proto-language of gestures, vocalisations and facial expressions to communicate needs and intentions.[20] It seems quite obvious that the act of wanting to make themselves understandable each other responds to a process of becoming more empathic – we may call this *empathisation* and the result would be the *Homo empathicus narrativus*.[21]

A higher capacity for socialisation and empathy would be yet to come after Ardi, i.e. in australopithecine species. First specimens of *Australopithecus*, named *anamensis*, lived a 'stable'[22] life 4,2 Ma, partly as a result of the changes in their environment, partly due to the growing complexity of their brains. Occasional scavenging involved the acquisition of DHA that promoted the internal expansion of the cerebral cortex in our 500 cm^3-brain-size relatives.[23] Despite having a brain like a chimpanzee, in terms of size, it was significantly restructured: The frontal lobes became more complex morphologically, the parietal association areas increased[24] and Broca's and Wernicke's areas,

17 Arsuaga, Juan L. and Martínez Mendizábal, Ignacio, *Atapuerca y la evolución humana* (Barcelona: Fundación Caixa Cataluña, 2004).

18 De Waal, Frans B. M., "The Antiquity of Empathy", in *Science*, no. 336 (2012): 874.

19 Agustí, Jordi; Bufill, Soler Enric and Mosquera Martínez, Marina, *El precio de la inteligencia: La evolución de la mente humana y sus consecuencias* (Barcelona: Crítica, 2012).

20 Ros Velasco, Josefa, "The Evolution of Language: An Anthropological Approach. Language in Prehistory", in *Evolutionary Anthropology*, vol. 25, no. 2 (2016): 79–80.

21 Coulehan, Jack, "Empathy and Narrativity: A Commentary on 'Origins of Healing: An Evolutionary Perspective of the Healing Process' ", in *Families, Systems, & Health*, vol. 23, no. 3 (2005): 261–265. Before a proto-language had come into play, another common, social practice betrayed an empathic behavior, the act of *grooming* that served to enhance friendship, loyalty and societal cohesion. *vid.* Dunbar, *Gossip*.

22 Arsuaga, Juan L., *El primer viaje de nuestra vida* (Madrid: Planeta, 2012).

23 Gazzaniga, Michael, *Human: The Science Behind What Makes Us Unique* (New York: Harper, 2009).

24 Agustí, Bufill Soler and Mosquera Martínez, *El precio de la inteligencia.*

responsible for manual control and language, were developed.[25] The recipients of these changes would be those species closer to the *Homos* such as *bahrelghazali* (4 Ma), *afarensis* (e.g. *Lucy*, 3,9 Ma), *deyiremeda* (3,3 Ma), *africanus* (e.g. *Taung child*, 3 Ma), *garhi* (2,5 Ma) or *sediba* (2 Ma). Surely, the latest *Australopithecus* had some level of operational intelligence and were self-aware to the extent of recognising their own bodies, cravings and moods, enabling more intricate emotional empathic behaviours.

This is perhaps the reason why, at this point, *pre-humans* began helping each other in food transportation,[26] in giving birth[27] and started to reciprocally exchange their foodstuff[28] after 'gender-based division of labour'[29] took place. Related males gathered with a small female harem to feed, sleep and move around to make life easier for these mothers by sporadically assisting them in caretaking.[30] Not just that, specific social caring interactions were attributed, even still in initial stages, to grandmothers.[31]

These all were signs of a growing empathic ability to understand the needs of others and how assisting in such requirements could help their own performance and subsistence. Almost on the verge of the leap forward *Homo* species, our ancestors were able to think of themselves as a *self*, knowing the difference between their *self* and the *others*' *selves*. Soundly, we cannot assume they were able to realise that others selves were aware of the same fact. The australopithecine proto-culture heirs marked the commencement of *Homo* species' evolution 2,4 Ma with a great ability to empathise beyond emotional empathy.

Cognitive Empathy in Homo *Species*

The Stone Age began with the advent of the first *Homos* that exceeded the limitations of *Australopithecus*: *Homo rudolfensis* and *Homo habilis*. The *handyman* had a brain truly similar to that of their predecessors, 510–600 cm^3 (KNM-ER 1813 and OH 24/*Twiggy*, respectively). The greatest difference is in

25 Arsuaga and Martínez Mendizábal, *Chosen Species.*

26 *Ibid.*

27 Fischman, Joshua, "Putting a New Spin on the Birth of Human Birth", in *Science,* no. 264 (1994): 1082–1083.

28 Roth, Gerhard and Dicke, Ursula, "Evolution of the Brain and Intelligence", in *Trends in Cognitive Sciences*, vol. 9, no. 5 (2005): 250–257.

29 Blumenberg, Hans, "Biotopwechsel, aufrechter Gang, generatives Verhalten", *Deutsches Literatur Archiv* (*DLA*), 03: 023868.

30 Arsuaga and Martínez Mendizábal, *Chosen Species*.

31 Roth and Dicke, "Evolution of the Brain and Intelligence."

r*udolfensis*' 800 cm^3-brain size.[32] *Rudolfensis* underwent aggressive *encephalisation*, as the specimen KNM-ER 1470 shows, resulting in a greater brain complexity internally ('wiring') and externally (brain matter). In *rudolfensis*, genes regulating the number of brain cells and their connections, named MCPH1, developed strongly.[33] This species had a greater amount of nerve tissue beyond what was necessary for the very survival. Consequently, their capacity for abstract thinking made possible empathise in a closer level to ours. They had a knack for looking the others as *others selves* and understanding the reciprocity of this act and its implications by being attentive to their own thought.

This, of course, affected their daily performance. It is known that *rudolfensis* was more inclined towards scavenging.[34] Females spent their time looking after the children, whose infancy was longer than that of *Australopithecus*,[35] with the help of the oldest relatives and also males when freed from the sporadic hunting task.[36] *Rudolfensis* was more flexible with regard to their own behaviour and that of others: they were more adjustable and creative in successfully tackling their environment and proto-society.

The last African *rudolfensis* had evolved, biologically and socially, to the extent that it is necessary to use another nomenclature for 1,9 Ma specimens: *Homo ergasters*, quite often also called *Homo erectus* as their Asian 'cousins' or African *Homo erectus*.[37] Firstly named *Telanthropus capensis* and then known for the 11–12 years-old *Turkana Boy* (also *Nariokotome Child* or KNM-WT 15000), *ergaster* had superior cognitive abilities in comparison with their ancestors. This species lived in a very unstable world and required great care to survive. Firstly, the latest *ergasters* developed such a brain size into the uterus that mothers had to give birth before their children's brains were fully formed for foetuses' head to be able to cross the birth canal.[38] They were born

32 Lieberman, Daniel E.; Wood, Bernard A. and Pilbeam, David R., "Homoplasy and Early Homo: an Analysis of the Evolutionary Relationships of H. habilis sensu stricto and H. rudolfensis", in *Journal of Human Evolution*, no. 30 (1996): 97–120.

33 Gazzaniga, *Human*.

34 Carbonell, Eudald, *Las primeras ocupaciones de los continentes* (Barcelona: Ariel, 2005).

35 Locke, John L. and Bogin, Barry, "Language and Life History: A new Perspective on the Development and Evolution of Human Language", in *Behavioral and Brain Science*, no. 29 (2006): 259–325.

36 Carbonell, *Las primeras ocupaciones*.

37 *Ibid.* Some *rudolfensis* moved out of Africa and settled in various parts of Asia 1,8 Ma. They evolved into the species *Homo erectus*. Others came back to Africa after a long time and many others never went out. They were those who led to the subsequent populations towards *sapiens*.

38 Arsuaga, *El primer viaje*.

absolutely dependent. That means a higher development of the intelligence but also a need for more care time. Secondly, the *working man*'s childhood was close to ours in terms of outbreak and length – proportionally to their life expectancy of 40.[39] Premature birth and prolonged infancy prompted cognitive and social changes translated into smarter individuals and more protective social environments.

It is also important the way in which such a care Took place. The majority of a group of 20 members were caregivers. Hunting forced them to maintain a life of nomadism, but bit by bit the settlements would be longer-lasting.[40] Females remained in them taking care of their children, together with those unfit for hunting – still too young, already too old, the wounded, the sick.[41] Males went out, looking for meat and staying overnight in caves when the preys were far from *home*. Division of labour and seasonal hunting of large animals had much to do with both female and male empathy, but also other factors did such as, for example, the use of fire and its promotion of socialisation.[42]

Sitting around it the day was longer, with more hours to be awake and interact, in longer summers. At night, a controlled fire would become the meeting place for telling stories responsible for transmitting experiences and knowledge;[43] since this species probably speak some kind of proto-language![44] Language is essential to talk about complex levels of empathy[45] as to speak to a peer it is necessary to understand and feel the same they are understanding and feeling.[46] According to Dunbar, communication helped to create a sense of emotional and cognitive solidarity among the members of the 'clan', giving cohesion and coherence to it, maintaining alliances strong, especially when males were hunting.[47] If they talked about what was happening is because they were able to understand they all were aware of their *self* and other *selves*.

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39 Locke and Bogin, "Language and Life History."

40 Lumley, Henry, *La Grand Histoire des premiers hommes européens Broché* (Paris: Odile Jacob, 2007).

41 Bloom, Michael V., "Origins of Healing: An Evolutionary Perspective of the Healing Process", in *Families, Systems, & Health*, vol. 23, no. 3 (2005): 251–260.

42 Barnard, Alan, *Language in Prehistory* (New York: Cambridge University Press, 2016).

43 Wiessner, Polly W., "Embers of Society: Firelight talk among the Ju/'hoansi Bushmen", in *Proceedings of the National Academy of Sciences*, vol. 111, no. 39 (2014): 14027–14035.

44 Barnard, *Language in Prehistory*.

45 Buck, Ross, "Communicative Genes in the Evolution of Empathy and Altruism", in *Behavior Genetics*, vol. 41, no. 6 (2011): 876–888.

46 Barnard, *Language in Prehistory.*

47 Dunbar, *Gossip.*

Women, overall, may have tended to talk about themselves and others,[48] which not only implies the ability to empathise but also promotes it.

Likely, last *ergasters* were able to sense their peers' affective and emotional states just by looking at their eyes, to think about such a sensation and the fact of being thinking about such a sensation. This level of empathy allowed them to promote a supportive behaviour of mutual care. Arsuaga firmly asserts this when ensures that our ancestors took care of those mentally and physically handicapped.[49] However, the first evidence of this belongs to other species that populated Europe 500,000 ka, *Homo heidelbergensis*. We will get back to this later, but *heidelbergensis* did share very similar characteristics with the last specimens of the species we are about to introduce: *Homo antecessor*, *ergasters*' successors.

Antecessor was described as a link between *ergaster* and *heidelbergensis* (in Europe) and *rhodesiensis* (in Africa). Their origins have been attributed to both a second *out of Africa*[50] at some point Beyond *ergaster* and a moving of Asian *erectus*' 'sons'. Whatever, *antecessor* seems to be a predecessor of *sapiens* and the analysis of their capacities, quite similar to those of *heidelbergensis*, are very helpful to understand the concrete examples I want to introduce on those handicapped. 900,000 ka, *antecessor*'s feedback loops between left and right hemispheres were more powerful and also the functions of the medial prefrontal cortex, responsible for self-reference and inner speech processes, and the anterior cingulate area, in charge of social relationships, emotions and inner world.[51]

In *ergaster* something was missing to equalise our empathy: they would have been able to neither consciously, deliberately empathise with others for an intentional purpose nor to project their thought forward and backward, i.e., to empathise with their past and future unknown peers[52] (mental time travel theory).[53] The first one would be earmarked for *Homo antecessor* and the second for *Homo rhodesiensis* and *sapiens*. *Antecessors*' mental life went through all the different conscious phases modern human beings do. They had a *core consciousness*,[54] or *phenomenic*

48 Locke and Bogin, "Language and Life History".

49 Arsuaga, *El primer viaje*.

50 Agustí, Jordi and Antón, Mauricio, *La gran migración* (Barcelona: Crítica, 2011).

51 Arsuaga and Martín-Loeches, *El sello indeleble*.

52 Gibbons, Ann, "Empathy and Brain Evolution", in *Science*, no. 259 (1993): 1250–1252.

53 Suddendorf, Thomas; Addis, Dona Rose and Corballis, Michael C., "Mental Time Travel and the Shaping of the Human Mind", in *Philosophical Transactions of the Royal Society of London B: Biology Science*, no. 364 (2009): 1317–1324.

54 Agustí, Bufill Soler and Mosquera Martínez, *El precio de la inteligencia*.

consciousness,[55] that involves most basic mental-state consciousness connected to attention and selection, perceptions, emotions, thoughts and memories, i.e. the genuine consciousness directed outward without any kind of reflection – what Sartre called *la pensée irréfléchie*.[56] Core consciousness is not unique to humans but necessary to talk of more complex, conscious systems such as self-consciousness, metaconsciousness or reflexive-self-consciousness. *Antecessor* was the first one with such an *extended consciousness*.[57] They could describe a situation in which they reflexively recognised being perceiving something, i.e., they could say themselves that the private mental state they were experiencing was own. This is the consciousness that experiences itself or *what we think when we think that we are thinking* of something: when our thought is the object of our attention.[58]

Such a level of consciousness involved the *interpreter*, the fundamental support of emotional but overall cognitive empathy. The interpreter is a rhetorical figure to explain the experience of the *self*. It builds a narrative of our actions, emotions and thoughts and unifies our past and future story.[59] The interpreter is a capacity of self-representation, an autobiographical memory that is possible because of the development of language, through *inner speech* or *subvocal speech*.[60] This mental function is directly related to the full capability to perfectly discriminate between the *self* and others *selves* and to move from the self-perspective to that of the other consciously, deliberately. Also, it leads time traveling ability that *ergaster* lacked.

As we said earlier, this would be also the case of *heidelbergensis*. They evolved into *Homo neanderthalensis* and Denisovans, not into *Homo sapiens*, but, again, this is seamless to our case. Our 1200 cm^3 brain size European relatives had a capacity for symbolic thinking. Among those who got into Spain, the *pre-Neanderthals* from Sima de los Huesos, there were three specimens

55 Zahavi, David and Parnas, Josef, "Phenomenal Consciousness and Self-awareness: A Phenomenological Critique of Representational Theory", in *Journal of Consciousness Studies*, vol. 5, nos.5–6 (1998): 687–705.

56 Sartre, Jean-Paul, *The Transcendence of the Ego: An Existentialist Theory of Consciousness* (New York: Hill and Wang, 1991).

57 Morin, Alain, "Levels of Consciousness and Self-awareness: A Comparison and Integration of various Neurocognitive Views", in *Consciousness and Cognition*, no. 15 (2006): 358–371.

58 Metcalfe, Janet, "Evolution of Metacognition", in *Handbook of Metamemory and Memory*, edited by John Dunlosky and Rober A. Bjork (New York: Psychology Press, 2008): 29–46.

59 Gazzaniga, Michael, *The Mind's Past* (California: University of California Press, 1998), 174.

60 Agustí, Bufill Soler and Mosquera Martínez, *El precio de la inteligencia.*

that reveal the *conscious* empathic behaviour that also characterised *antecessors*: *Elvis*, *Miguelón* and *Benjamina*.

Elvis (400,000 ka, Pelvis 1) represents a collection of fossils consisting of a pelvis and some parts of a trunk, which shows that the specimen to whom they belonged suffered a locomotor disability called spondylolisthesis. The *grandpa of Atapuerca* was a very old individual of 45–50 with a degenerative lumbar kyphosis because of which his backbone did not have a normal curvature. His hip inclination would have caused so much pain to Elvis that he would not have been able to move as the rest of his group. Surely, he needed some type of cane and he moved very slowly. However, despite being a 'burden' for his group, slowing down their migrations, such a family never abandoned him, which seems to be a clear evidence of complex empathy.[61] Some authors ensure that despite his precarious living conditions, Elvis received care from his family because he was able to do sedentary tasks and to look after the children. Also, his life experience may have been considered a source of wisdom.[62] In this regard, their family could consciously keep him alive for a matter of *interest*.

The almost perfectly preserved skull of Miguelón (400,000 ka, Skull 5) shows that this individual suffered from a dental infection that put an end to his life by septicaemia at age 35. Before he died, his family looked after him for a while so that his affected bone had time to heal. His symptoms during that time could include fever, shortness of breath, rapid heartbeat, low blood pressure, shaking chills, fatigue, drowsiness, delirium and mental confusion.[63] So, why was this individual kept alive? Quite likely, his infection and subsequent pain would not make him very valuable for sedentary tasks and care – overall if it was the case of suffering from altered states of consciousness, which may even constitute a danger to others. Why did they take care of Miguelón?

Benjamina (530,000 ka, Skull 14) was a little girl with craniosynostosis, a condition in which one or more of the fibrous sutures in an infant skull prematurely fuses by turning into bone (ossification), thereby changing the growth pattern of the skull. Benjamina's cranium did not grow normally and she

61 Bonmatí, Alejandro, *et al.*, "Middle Pleistocene Lower Back and Pelvis from an Aged Human Individual from the Sima de los Huesos Site, Spain", in *Proceedings of the National Academy of Sciences*, vol. 107, no. 43 (2010): 18386–18391; Bonmatí, Alejandro, "El caso de Elvis el viejo de la Sima de los Huesos", in *Revista de Humanidades*, no. 10 (2011): 138–147.

62 Arsuaga, *El primer viaje*; Arsuaga and Martín-Loeches, *El sello indeleble*.

63 García, Ana, *et al.*, "Orofacial Pathology in Homo heidelbergensis: The case of Skull 5 from the Sima de los Huesos Site (Atapuerca, Spain)", in *Quaternary International*, no. 295 (2013): 83–93.

suffered from migraines and vomiting, psychometric and behaviour disorders and some form of mental retardation and optic atrophy. Despite her shortcomings, Benjamina received care from her group to the extent that she survived 10 years.[64]

Undoubtedly, for the group to consciously see some advantage in looking after a disabled child or adult it was necessary a high capacity for complex, intentional empathy. In particular, Benjamina was assisted all the time, as she would have needed special long-term care, instead of being abandoned to a certain death. Her family was willing to bear the burden of her disability in their continuous displacements and to sacrifice part of their food to feed a member who would never be *helpful* in practical terms. This is not strictly true: caring of the weak could increase the reputation of those in charge of individuals like Benjamina or Miguelón in a complex social structure. Mothers and young females could demonstrate their abilities as future mothers to males by taking care of the weak.[65] Other members, as the wounded and elders, from their part, could prove their worth in helping mothers and young females to look after others to ensure their own care.

What differentiates these cases from those in which primates behave *altruistically* – for example, when "a female chimpanzee reacts to the screams of her closest associate by defending her against an aggressive male, thus taking great risk on her behalf" or when a group adopt orphans "who may devote years of costly care to unrelated juveniles"[66] – is that they do not think about this phenomenon and its advantages consciously. Both are thinking of rewards, but the former innately and the latter deliberately. This is the result of internally telling oneself: *I'm going to behave in such a manner to obtain something from my group*.

Our immediate predecessor, *Homo rhodesiensis* (600,000 ka) was in the same conditions there in Africa. Also known as *Kabwe 1* or *the Broken Hill skull*, perhaps what made the difference between them and us in terms of ability to empathise was the complexity of the purposes of their empathic behaviour when our brain reached its definitive complexity 200,000 ka. In brief, the jump from *rhodesiensis* to the first *sapiens* would crystallise in the existence of a collective

64 García, Ana, *et al.*, "Craniosynostosis in the Middle Pleistocene Human Cranium 14 from the Sima de los Huesos, Atapuerca, Spain", in *Proceedings of the National Academy of Sciences*, vol. 106, no. 16 (2009): 6573–6578; García, Ana, *et al.*, "The Earliest Evidence of True Lambdoid Craniosynostosis: The Case of 'Benjamina', a Homo heidelbergensis Child", in *Child's Nervous System*, vol. 26, no. 6 (2010): 723–727.

65 Bradshaw and Paul, "Could Empathy for Animals."

66 De Waal, "The Antiquity of Empathy", 875.

consciousness about the intrinsic value of their own species and the ability to use perspective-taking not only individually but collectively to take advantage of the fact of knowing others' mental states. This would explain why they began to bury their dead and created shared myths and metaphysical orders. They also became cognitively empathic with other animals by thinking as them to facilitate hunting and making them think as humans to avoid becoming preys (ToM for animals), to the point of domesticating them over time.[67] Primitive *sapiens* were able to consciously think about empathy and perspective-taking and its possibilities as a group. The statement, in this case, would be: *We're going to behave in such a manner to obtain something from other groups*.

Moreover, *sapiens* could/can *use* the knowledge about their peers' to *influence* their actions and thoughts, to *convince*, in their own advantage,[68] what is different from simply behaving consciously in an empathic manner just expecting a reward. Our species would have specialised in using empathy to predict others' intentions and manipulate them and even in simulating fictitious versions of the beliefs, desires, character traits and contexts of another individual or collective to see what emotional feelings came out and use such an insight to deceive the peers. Perhaps empathy is different in *sapiens* because we have reached the level of what Whiten and Byrne called Machiavellian intelligence[69] – and only perhaps this was a reason for the withdrawal of the other *Homo* species, *Homo neanderthalensis* and Denisovans.

Slightly simplified, this is a tentative proposal on the evolution of empathy from contagion to Machiavellian intelligence throughout Hominisation. Yet we have to see the reasons behind the adoption of higher levels of empathy over time, the pressures influencing such a possible evolution to a point in which our ability to empathise may lead us to both the most prosocial and the most antisocial behaviour.

3 Anthropogenetic Reasons for Empathy

Some people believe that empathy, as well as solidarity or altruism, is a means to an end, so it meets a certain function, even in its most basic forms.[70]

67 Bradshaw and Paul, "Could Empathy for Animals".

68 Dunbar, *Gossip*.

69 Whiten, Andrew and Byrne, Richard, *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect on Monkeys, Apes, and Humans* (Oxford: Oxford University Press, 1988).

70 De Waal, "Putting the Altruism."

Charlton explained that sufficiently developed animals do experience, at least, contagion, sympathy and even emotional empathy if they are able to pay attention to others' emotions.[71] This is the level of empathy that, since it is not self-conscious, does not open the door to freely choose what to do with it. It simply leads an impulse in response to some kind of biological (reproductive) and evolutionary (survival) pressures. This was also the case of our pre-*sapiens* relatives.

Firstly, empathy before and after first *Homo* species seems to mainly respond to a maternal, emotional – even unconscious – impetus for caring.[72] As De Waal claims, the evolution of empathy is thought to go back to mammalian maternal care.[73] This usually explains why women tend to be more empathic than men.[74] Our female ancestors were primary caregivers of children and then *nurturers of the group*. They seem to have been the *Homo empathicus* par excellence.[75] At the very beginning, they looked after their children and some others to demonstrate their skills as mothers to males. With the advent of *Homo* species, they started to consciously rear their children and the weakest peers in the settlements ensuring their own reputation and the unity of the group. In complex *Homo* 'societies', caretakers would have attended to the most vulnerable, the defenceless or the 'hopeless', even with more devotion than to any other: they were the favourites.[76]

It was because of this act of empathy promoted by 'the mothers' and supported by 'the outcasts' in search for acceptation the weak could survive and put an end to *the law of the strongest*. Thanks to the 'culture of care' those who could neither take for themselves the right of the strongest nor become the breadwinners found a compensation mechanism to gain the right to survival through empathy and mutual support.[77] Furthermore, this became a matter of sexual selection. Hunters must adapt to their weak-caregivers-peers' pace of life on returning 'home' to win the goodwill of females who would select

71 Charlton, Bruce, "Evolution and the Cognitive Neuroscience of Awareness, Consciousness and Language", in *Cognition*, no. 50 (2000): 7–15.

72 Bradshaw and Paul, "Could Empathy for Animals"; Decety, *et al.*, "A Neurobehavioral Evolutionary Perspective."

73 De Waal, "The Antiquity of Empathy."

74 *Ibid.* Also Baron-Cohen, Simon, *The Essential Difference: The Truth about the Male and Female Brain* (New York: Basic Books, 2003).

75 Bloom, "Origins of Healing."

76 Blumenberg, Hans, "Die Lieblinge der Mütter in den Höhlen", *Deutsches Literatur Archiv*, 1.2: UNF 162.

77 *Ibid.*

their mates depending on how empathic they were able to be.[78] Under different pressures, their ability to empathise was much more led toward understanding animal mind and behaviour "to take on the perspective of potential prey in tracking"[79] and not to "lessen the likelihood of falling prey to animal hunters."[80]

Empathy seemed to have put an end to the basic problem of human beings: the fragmentation of the group in the weak and the strong.[81] Nothing could be more untrue. With the consolidation of the group, the family, and the subsequent collective consciousness, the problem was transferred from the ingroup to the outgroup.[82] Survival and sexual pressures then together with pre-socio-cultural ones put our most recent prehistoric relatives in the position of having to make use of the knowledge achieved on others' states of mind for their collective-interests. Here I see that our former ability to use animals' minds reading to make them preys was extrapolated to humans.[83]

As new pressures appeared in *sapiens*' life the power of empathy would increase, as well as cognition, to the extent of becoming both the best hope and the greatest danger concerning collective survival: a "simultaneously prosocial and cruel" disposition.[84] With regard to empathy, things went awry when we started to put ourselves in the others' position to take advantage of their weaknesses. Understanding others' position implies knowing their shortcomings. The primitive, naive empathy ceased to be such when *economy* replaced *ecology*.[85]

What is/are the reason/s for empathy today? If empathy can develop man into a wolf to a man, what is the function of empathy currently? At this point, empathy no longer responds to a survival or reproductive function but to a

78 *Ibid.*

79 Sarnecki, John, "The Emergence of Empathy in the Context of Cross-Species Mind Reading", in *Origins of Mind*, edited by Liz Swan (Dordrecht: Springer, 2013), 129.

80 *Ibid.*, 135.

81 Ros Velasco, Josefa, "La debilidad como ejemplo en la antropología de Hans Blumenberg", in *Predicar con el ejemplo. Ser y deber* (*de*) *ser en lo público*, edited by Ricardo Gutiérrez Aguilar (Barcelona: Bellaterra, 2019).

82 Richerson, Peter J. and Boyd, Robert, *Not by Genes Alone: How Culture Transformed Human Evolution* (Chicago: University of California Press, 2005).

83 Sarnecki, "The Emergence of Empathy."

84 Young, Alan, "Empathy, Evolution and Human Nature", in *Empathy from Bench to Bedside*, edited by Jean Decety (Boston: The MIT Press, 2011), 29.

85 Blumenberg, Hans, "Alle Tierpopulationen haben Ökologien, nur die menschlichen Populationen haben Ökonomie", in *Deutsches Literatur Archiv*, 01 (1968–1988): 019592.

wish to have a better standard of living ('over-survival'/beyond-survival). Since then, it is our responsibility to tip the balance towards creation or collapse in the use of our empathic abilities. We have to *morally* choose what to do with our empathy. With de Waal, we cannot say that humans behave like apes because precisely they have nothing to choose and seems to be even more empathic than us in both behaviour and brain organisation.[86] Will human beings have to become *mechanical animals*[87] to avoid misuses of empathy and ensure the survival of humankind?

What if the matter of empathy is much simpler? Agreeing again with de Waal, "although empathy [...] is likely to be adaptive, not each and every application of this capacity needs to be for it to retain overall adaptive value";[88] it could be even just the opposite. Perhaps the explanation of empathy is much simpler and species behave empathically just because this kind of social behaviour is endogenously rewarding and stimulate "dopamine release within the mesocorticolimbic dopamine system", as Decety claims.[89] The obvious conclusion is that empathy does not allow to be fully apprehended by rationalisations.[90]

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86 De Waal, "The Antiquity of Empathy."

87 A recall to the album *Mechanical Animal* (1998), by Marilyn Manson.

88 De Waal, "The Antiquity of Empathy", 875.

89 Decety, *et al.*, "A Neurobehavioral Evolutionary Perspective", 42.

90 This chapter addresses some points concerning empathy presented in my doc. diss. *Boredom as selective pressure in Hans Blumenberg* (UCM, 2017). I would like to express my gratitude to the DAAD, the DLA and the MECD, the projects FFI2012-32611-FFI2016-75978-R and FFI2016-78285-R, and the RCC and the RLL at Harvard University. To Ricardo Gutiérrez Aguilar, for reminding me what matters.

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