

The impact of the Darwinian revolution on our conception of *what it is to be a 'human being'* and our consequent relationship with the natural world

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1. Introduction

This paper is concerned with the effect of Charles Darwin's theory of evolution on the way we conceive the origin and relatedness of every living organism. Nowadays, his ideas permeate scientific and philosophical concepts. In what follows, I stress the importance of humanistic disciplines in handling these questions. Subsequently: 1) to appraise the novelty of Darwin's ideas, I cite some texts that have shaped our relationships with other human and non-human beings; briefly review both the concept of 'humanism' or '*paideia*'¹, in order to understand the ideal of man it exalted and the changes in beliefs caused by Christianity. I then consider: 2) Darwin's departure from traditional thought; 3) the effort to define, empirically, "genus Homo"; and 4) David Wiggins's recourse to 'sortal concepts' to clarify the concept of 'identity within a class'. I conclude by pointing out the ethical obligation of restoring our relationship with the natural world and the role of women in this venture.

2. Our Relationships with Other Human and Non-human Beings

The twenty-first century has brought threatening problems —among them global warming and accelerated rate of species' extinction—that require immediate attention. Ultimately, the way to deal with them depends upon our moral values. We need a new humanism, an education that allows us to rediscover human values and live in equilibrium with the environment. In relation to the natural world, Peter Singer's thesis in *Animal liberation* (1975) that "the moral basic principle of equal consideration of interests² [should not be] arbitrarily restricted to members of our own species" (ibid. ii) is of great help in this endeavor. As to education, Bernard Williams has, thankfully, refreshed the role of humanistic disciplines in understanding ourselves, and our present situation in which philosophy, wrongly, is sometimes considered dispensable. Philosophy is essential to make sense of our intellectual activities. We need the help of humanistic disciplines to understand our ethical concepts (cf. Williams 2000, sect. 5).

Intuitively we consider that a person is an individual entitled to respect and dignity, endowed with social and political rights. Thus, the concept of 'person' intimately links up with that of 'relation': relationships towards oneself, others, society, and environment. The features usually assigned to the concept 'person' are unity and continuity of the conscious life of the self and self-awareness. From a moral perspective, a person is always an aim, not a means or an instrument³ —a distinction inverted in *real-politik*. 'Distinction' and 'relation', the notions associated with 'person', enlighten us as to why

¹ The word "humanism" comes from the Latin "humanitas" whose meaning, since 100 BC, coincides to that of the Greek term "*paideia*" as referring to the formation of man in order to reach perfection, accordingly to the abilities of his true nature.

² "Only the beings with capacity of suffering or enjoying can have interests", Singer maintains (ibid. 6).

³ Singer extends this idea to non-human animals: against the discriminatory attitude that he calls "speciesism" —similar to sexism and racism—, he declares that nowadays "factory farms", are "nothing more than the application of technology to the idea that animals are means to our ends" (cf. 1975, 6, 160).

the question about persons emerges as the question of 'personal identity'. Since we believe that a human being is a person, this assumption confers special epistemological and moral weight to the task of defining the term "genus *Homo*": it does not denote all persons in all definitions.

The following textual passages express crucial beliefs about the nature of man and knowledge. The attitudes that these beliefs generate have clashed from time to time, even violently:

- i) *In the beginning, God created the heaven and the earth (The Holy Bible..., Gen 1:1).*
- ii) *And God said, Let us make man in our image [...], and let them have dominion over the fish of the sea and over the fowl of the air, and over the cattle, and over all the earth (ibid. 1:26).*
- iii) *I am the Lord thy God... Thou shalt have no other gods before me (ibid. Ex 20:2-3).*

Hebrew tradition, transmitted to Christianity, explains the creation of world and man as an act of divine will, and justifies the dominion over all other creatures as granted by God to man —(i) and (ii)— (cf. *ibid. Gen 2:17*). From (iii) in particular we can gain a better understanding of the gap between Judaeo- Christian and Greek thought.

In contrast to this, Aristotle's passage, which reveals the Greek spirit at its peak, sees knowing differently:

- (iv) *All men by nature desire to know. An indication of this is the delight we take in our senses; for even apart from their usefulness they are loved for themselves (Aristotle *Metaphysica*, 980^a 25).*

And in further contrast is Darwin's challenge to the creationist belief:

- (v) *The innumerable species, genera, and families of organic beings [...] have all descended [...] from common parents, and have all been modified in the course of descent [...] I should without hesitation adopt this view, even if it were unsupported by other facts and arguments (Darwin 1859, 458).*

To return to Aristotle, Greek culture recognized the inherent worth of the individual and the idea of nature as an ordered cosmos whose underlying laws or principles are within reach of human intellect. These laws ruled heavenly bodies, human life, and social structures. To elucidate them was the task of artists, thinkers and rulers.

The goal of Greek 'humanism' or '*paideia*' was to form an accomplished man akin to the 'ideal' type: an actual human being entrenched in his circumstances, living in the specific societies that were the city-states, within which people acquired a lucid consciousness of the goals of their educational system.

In Plato (+348 or 347 BC)'s realm of Ideas, the sphere of transcendent archetypes and values, Justice was preeminent. Its attainment constituted the goal of man and society.

Aristotle (+322 BC) stressed the empirical condition of man and nature. He thought that the guiding principle of man's behavior is immanent, this being his own essence. From this perspective, his essence happens to be also his final cause, and chief good. The means to reach it consists in performing men's most distinctive activity: reasoning. Man's contentment lies in attaining

knowledge. However, Classical humanism had its 'dark side': the free man was the sole human being intended for its purposes. Children, women, foreigners and slaves did not matter⁴ and had no rights.

The writings of the early Fathers of the Church (I AD) represent the origin of Christian philosophy and theology. They sought inspiration in classical intellectual and aesthetic values, although their main concern was to teach the message of Christ.

After the advent of Christianity: a) human reason and ethics lost their autonomy because, in the tradition and dogma of the Church, faith prevailed over the free search for knowledge, and determined moral norms and the hierarchy of values. b) Deeming Eve responsible for the 'original sin', and consequently for introducing hardships, sickness and death into Earth (cf. *The Holy Bible... Gen 2:17, 3:16*) created an enduring and biased attitude of blame and discrimination against women⁵. c) The ownership of all other creatures granted to man has contributed to the abusive exploitation of nature; and d) God is the transcendent destiny of humans; His presence will be their happiness in the afterlife.

3. The Darwinian Revolution

After much turmoil, at the end of the fourteenth century, during the Renaissance, man regained the center-stage of culture. Amazing scientific and technological revolutions took place, but the basic belief about the origin of man remained firmly anchored in God the Creator until Darwin published his Theory of Evolution by means of Natural Selection. This author's *On the Origin of Species* constituted a radical shift in conceptions of human nature, its origin and the world. It represents:

- Rejection of philosophical essences (cf. Mayr 1964, in Darwin 1859): One must understand "how species arise in nature. How is it that varieties, *which I have called incipient species* [emphasis mine], become ultimately [...] good and distinct species" (Darwin *ibid.* 61).

The Darwinian concept of evolution, substituting *eidos* for variable population, went against traditional typological thinking, which stems from "the earliest efforts of primitive man to classify the bewildering diversity of nature into categories" (Mayr, in Darwin *ibid.* xx).

- Rejection of creationism to explain the origin of living beings, man included (cf. Darwin *ibid.* 61, 123). The key characterization of the concept of natural selection in terms of: "survival, the ability to contribute to the genetic content of the next generation, is not at all a matter of accident, but a statistically predictable property of the genotype" (Mayr, in Darwin *ibid.* xvi). Finally, the
- Dismissal of a radical difference between the minds of man and other animals: the distinction is just one of degree.

Darwin's "historical approach, his model-making, his demolition of unsatisfactory models before proposing new ones, his elimination of prediction from causation, his 'population thinking', [...] and the way in which he uses the 'comparative method' [make him] so modern" (Mayr, in Darwin *ibid.* xviii, xix).

⁴ Plato was the exception, thinking that women should participate in the guardianship of the Republic and share rights and duties with men. (cf. *The Rep.* 451-452 D)

⁵ The classical myth of Pandora, who spread misfortunes and disasters over the Earth, is similar to that of the biblical Eve in viewing women as the cause of all evils.

4. An empirical definition of “genus *Homo*”

To characterize ‘genus *Homo*’, Bernard Wood inquires: “Where does [it] begin” (2009, 17), and “how does the fossil record allow us to recognize its first members?”

Are we all human?

MPT1

Several members of the *Hominidae* sub family



Wood distinguishes: a) Four criteria; b) “two lines of evidence (phenotypic and genetic)” (ibid. 17), and c) two categories into which they fall.

The criteria are:

- a.1) Relationships among taxa.
- a.2) Information about their ‘adaptive grade’ —that is, their anatomic and physiological similarities (cf. ibid. 19-25).
- a.3) Estimates of the genetic distance that separates them. And,
- a.4) estimated time of divergence.

The first category (c1) relies mostly on “phenotypic evidence”. It generates four genus concepts which respectively require that members of a genus be:

- c.1.1) of common ancestry (Mayr);
- c.1.2) monophyletic (Henning);
- c.1.3) occupying a single adaptive zone⁷ (Wood and Collard). And,
- c.1.4) that only one species within a genus may occupy a different adaptive zone (Cela-Conde and Altaba) (cf. Wood ibid. 17).

⁶ Image by paleoartist John Gurche. http://www.gurche.com/main_frameset.htm

⁷ “Adaptive zone” refers to “a set of ecological niches that may be occupied by a group of species that exploit the same resources in a similar manner” (Simpson, 1944. In http://en.wikipedia.org/wiki/Ecological_niche. December 2010).

The second category (c.2) relies on “genetic evidence for estimates of genetic distance or estimates about the timing of evolutionary events, which [become] criteria for recognizing genera” (ibid.) It contains two genus concepts:

- c.2.1) Focuses on “genetic distance” (Watson et al, in Wood ibid. 17-8).
- c.2.2) Combines “genetic distance and time”. Regarding primates, this characterization sets a period comprised between 11 and 7 Ma BP: if they originated in that time, “the species in a primate monophylum should be included in the same genus” (Goodman et al, in Wood ibid. 18)⁸.

If definitions (c.2.1) and (c.2.2) are accepted, it implies that, besides *hominin* taxa, “chimpanzees and bonobos” belong to genus *Homo* (ibid.)

Wood, however, rejects this, arguing that all taxa belonging to genus *Homo* should “share functional characteristics or competencies”—such as the use of complex language, the ability to hunt, and the making of tools— which can be “reliably detected in the early archeological record” (ibid.)

Wood then lists the relevant chapters in the history of the interpretation of the concept ‘genus *Homo*’, which he considers a matter “of episodic relaxation of the criteria used for including taxa in *Homo*” (ibid.):

- 1758: Linnaeus’ *Homo sapiens*.
- 1864: *H. neanderthalensis*: rounded supra orbital margins, midline facial projection, robust limb bones.
- 1908: *H. heidelbergensis*: represented by the Mauer mandible.
- 1921. *H. rhodesiensis*, and
- 1931: *H. soloensis*. Crania “substantially more robust than those of modern humans and *H. neanderthalensis*”. Endocranial volume “close to” ours (Wood ibid. 19)
- 1940: *Homo erectus*: smaller endocranial capacity. Postcranial constituents “consistent with an upright posture and obligate long-range bipedalism” (ibid.)
- 1964: *Homo habilis*: 1.87 and 1.78 Ma BP. Controversial taxon. Small brain (approx. 600 cc) encased in fragile parietal bones but capable of converting stone into cutting instruments, and of spoken language.
- 1964: *Homo rudolfensis* or ‘early *Homo*’: 2.4 and 1.9 Ma BP. Its facial features are a mixture of a “*Homo*-like neurocranium, and a broad *Paranthropus*-like face” (ibid.)
- 2004: *Homo floresiensis*: 74000 and 18000 years BP. Endocranial volume around 400 cc; stature of approximately 106 cm.

In considering the interpretation of ‘genus *Homo*’, Wood insists that:

- a) Although genetic-based interpretations support Goodman *et al*’s claims that humans and chimpanzees are co-generic species, these claims are meaningless because “morphological evidence”, as well as “functional inference”, should make a difference (cf. Wood ibid. 24).
- b) About (a.2), or the criterion of the adaptive similarity test, Wood remarks that it is not reliable because any set of characteristics chosen to deduce “the adaptive grade of a taxon” results in a *Hominin* genus extremely inclusive, with groups exhibiting a wide “range of onto genies and life histories”.

⁸ Groves (2004) proposed a restriction to (c.2.2) (in Wood ibid. 18): only primate populations originated between 6 and 4 Ma BP may belong to *hominin* taxa —the group consisting of extinct and extant human species, and our immediate ancestors.

To maintain that *H. habilis* and *H. rudolfensis*, notwithstanding their discrepancies in “relationships and adaptive grade”, belong to the same category as pre-modern and modern humans, is a stance about the origins of the genus that inevitably will be reflected in the attempts to define “*Homo*” (ibid.)

Now, Wood concludes, “we have come as far as we can with the evidence at hand” (ibid.)

From the viewpoint of defining “*Homo*”, Wood’s statements are sound: a definition must enhance precision and clarity in the use of a given term or expression, and also be accurate if it is to account for the nature of the object it refers to. However, in characterizing ‘genus *Homo*’, Wood shows himself biased: to sanction the inclusion of a candidate within this genus, he favors primarily criteria – be they morphological, genetic, or functional – allowing him to discriminate between *Hominine* species. Their selections, or the restrictions he places upon them, reveal the prejudice that only humans are persons.

5. Identity under a class

The definition of ‘genus *Homo*’ may also be approached from the philosophical standpoint of sortal predicates, which are deemed to answer the question ‘what is it?’ and specify the nature of a given kind. They are thought of as providing criteria for counting entities belonging to a given kind, establishing the identity and non-identity among items of that kind, and tracing their persistence. Wiggins (2001) analyses ‘sortal’ predicates, applying them to concepts. His main points are:

- a) Definition of “sortal predicates”; b) thesis of “sortal dependency”; c) examination of the criteria for singling out a given thing and identifying it as belonging to a kind; d) emphasis on the link between science and philosophy: the view of laws of nature as the “cornerstone” of the identity relation among individuals within a natural kind; and e) consideration of personal identity as a case of “the general question of the identity and individuation of substances”.
- a) ‘Sortal predicates’ are technical terms “associated with ‘substance’ and the *what is it?* question but [belong] in the met language” (ibid. 8/26).
- b) In the context of questions about identity and individuation, Wiggins presents his thesis of “Sortal Dependency” (“D”). For him the meanings of “individuating” and “sortal” coincide, thus he declares, “Behind every true identity claim there stands an identity covered by the concept of some particular kind of thing” (cf. ibid. xii/14).
- c) Due to the difficulties raised by cases as massive parts or organ replacement, Wiggins acknowledges that neither the criterion of persistence, nor the one of individuation, are reliable for counting, or identifying items of a kind, since the sortals involved may differ.
- d) Natural kind words are the most suitable aspirants to fulfill the function of “sortal and substantial predicates” (Wiggins ibid. 77/95):

His thesis D(v), which states that “f is a substance-concept only if f determines either a principle of activity, a principle of functioning or a principle of operation for members of its extension” (ibid. 72/90), emphasizes the link between philosophical analyses and the empirical content of sortal concepts.

Wiggins’ treatment of sortal predicates and natural kind words discloses a return to classical trust in the power of intellect to discover the laws underlying natural phenomena: These laws guarantee, “any particular entity really is an f, or a g, or whatever” (ibid. 85/103).

- e) When Wiggins focuses “on human beinghood”, he treats personal identity within the framework of “the general question of the identity and individuation of substances”, but as cases requiring that the “cognitive activity” of humans be taken into account (ibid. xiv/16):

On this basis, [he says], I seek to show that [the significant part] is what kind of thing it is we are concerned to individuate when we ask what a human person is (ibid.).

The imprint of Darwin in Wiggins’ analysis shows itself in:

- His insistence that a reliable theory of individuation requires the continued effort to characterize the kinds “by which we individuate and sort particulars” (ibid. 54/72); and
- his frequent emphasizing of the role of the laws involved in tracing and re-identifying as “one and the same” the entities belonging to a certain kind.

Treating sortal predicates as substance predicates, that is as concepts of species, genus and the like, somewhat reconciles Greek essences (‘what a thing is’) with evolutionary thinking. Science needs concepts, general “terms”; otherwise, our language, any language, would create Babel. Even though Darwin declares that each variety is “an incipient species”, he uses the term “species” “for the sake of convenience”, to designate “a set of individuals closely resembling each other” (In Zimmer 2008, 74). However, ‘species’ is not a rigid concept anymore. Now it must be viewed from the perspective of probabilities and percentages, not as a matter of archetypal essences.

6. Concluding remarks

Regarding the characterization of ‘genus *Homo*’, the relevant issue is that the meanings of “human being” and “person” do not coincide. The assumption that only we, humans, are entitled to rights underlies the rejection of other *Homininae* species within our genus. This issue, and the kinship among all organisms, gives Darwin’s revolution an ethical dimension: our relationship with other living beings and with nature in general, must be one of care and respect.

Finally, what does the Darwinian revolution have to do with a group of educated women? By understanding in depth our close connection with other organisms, we must take on certain ethical obligations to:

- Be aware of the possibility that, when certain animals (e.g. an elephant, a whale, etc.) are hunted down a “person” may be slain;
- Realize the injustice of breeding and slaughtering animals for food in ways that cause them extreme distress;
- Communicate this knowledge, and promote the respect and care due to all fellow organisms.

By internalizing the urgency to protect the environment, we can modify attitudes and habits generated by centuries of ignorance and greed (see Singer i, 5, 6).

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