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Discussion Note

The Demarcation of Species: Ontological Aspects of the Human Incarnation.

Karim Daghbouche [a]*, Abdelhak Darbouche [b], Sami M. Angawi [c]
[a] Hanover (Germany)
[b] Institute of Biology, University Khenchela (Algeria)
[c] Al Makkia Al Madania Institute, Jeddah (Saudi Arabia)

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ABSTRACT

While human beings are without any doubt orders of magnitude removed from animals in the degree of development, no difference in *degree* alone can constitute a difference in *kind*. The formalization of this phenomenological inability to define the demarcation of species is not only of utmost highest importance with respect to the conception of human dignity but also to the ethical classification of the human ability to design hybrid-creatures. The heuristic principle of inability motivates an ontological consideration suggesting an unambiguous species-barrier defined by a *generic* and *specific* analysis of the human incarnation.

Keywords: human dignity, hybrid-creature, mankind, homo sapiens, species-barrier, phenomenology, ontology, monotheistic book religion, Adam

1. INTRODUCTION

Human dignity is an integral part of the human self-conception. According to the basic beliefs of Jews, Christians and Muslims as well as common principles of civilization and convictions of representatives of other religions, the human dignity is an absolute *constant*. Therefore, it is not a *variable* in a function of a specific physical or mental condition, nor of a special performance and not of social characteristics in any way. Human dignity is an essential feature of mankind and totally independent of any consensus, regardless of particularities of the situation, time, place or other circumstances. However, with more than 20 scientific concepts presently in circulation, the debate over how species should be defined to accommodate biodiversity findings with established paradigms in conjunction with ethically critical biotechnology capabilities in terms of designing hybrid-creatures is in a dynamic process (Claridge et al. 1997; Mayden 1997; Howard/Berlocher 1998).

2. CLASSIC SELF-CONCEPTION

The classic self-conception of the human genus is characterized by seeking an unambiguous demarcation between human and animal. In biology, e.g., every organism is classified as a specific *genus* (taxonomically) and *species*.[1]

[1] E.g., the genus of chimpanzee (*Pan*) comprises of two species, *Pan troglodytes* and *Pan paniscus*.

*Corresponding author: karim.daghbouche@gmail.com

For a long time in human cultural history, this rather constant concept of given categories which were defined by external distinctions proved to be sufficient.[2]
Since the 19th century however, biology shifted more and more to the concept of variation where evolution manifests itself within respective species yielding to more differentiated species, e.g., caused by epigenetic environmental agents.

Population Genetics
But regardless of the latter, the current population-genetic concept is defined as *reproductive community* with reproductive isolations between species, i.e., mating between different species either doesn't take place or yields infertile descendants.
Looking at the genetic, molecular-, and cell-biological layer, it allows specifying close relations as well as differences, e.g., human and chimpanzee share roughly 99% of their genetic code (Chimpanzee Sequencing and Analysis Consortium 2005). Nevertheless, obvious differences are apparent with regard to anatomy, physiology, as well as behavior and cognition so that the analysis of differences focuses more and more on complex systemic means of differentiation, namely on gene-triggering, which impact the latter has on the created proteins, and how the organization of gene-networks and cell-communities differentiates.
But the species-barrier does not only become evident with genetic methods in laboratory environments:
Mammals, e.g., defend it by species-specific immunological reconnaissance mechanisms which recognize proteins of foreign species and eliminate them, i.e., if non-conspecific proteins are injected into the blood of an adult organism, a severe immune-reaction is observed. Based on the same mechanism, transplants of non-conspecific cells and tissue are rejected and removed from the receiving body.
It would be tempting to define a biological *genus* simply as an empirically observed, closed reproduction- and descendant community which represents a genetic, ecological and evolutionary unit. In general, this unit should then share the same characteristics as far as anatomy, physiology, immunology, behavior, and cognition is concerned.
But this demarcation is sustainably challenged, namely with the ability to design hybrid-creatures for therapy research, preclinical studies or in the curative sector (Taupitz/Weschka 2009).
Typically, the differentiation of Homo sapiens refers to the peculiarity of certain characteristics such as the faculty of speech, self-awareness, cultural ability, and most important: Morality.
The demarcation of human and non-human life is hence commonly set to be of cultural, legal and ethical exception.
However, not only evolution theory disputes this demarcation in its very conception, but also modern behavioral- and social biology:

3. BEHAVIORAL BIOLOGY

Language Ability
The observation of numerous monkey species, whales, dauphins, and elephants demonstrated a rich repertoire of different lutes and gestures, e.g., for describing different feeds or feed-enemies (Syfarth/Cheney 2010).
Some monkeys and parrots even learned comprehensive words and human grammar (Savage-Rumbaugh et al. 1993; Pepperberg 2002; Kaminski et al. 2004.)
The ongoing debate concerning the ability of language focuses on the

[2] E.g., the monotheistic tradition of the deluge where *Noah* rescued animals according to their different genus.

creation of symbols and their grammatical combination and tries to measure complexity and abstraction with the ability to express the past and the future which is assumed to be exclusively reserved to the human species.
In this differentiated sense, language obviously became the carrier of religion, and the driving force of science, technology, and arts.

Self-Awareness
Self-awareness is the ability to take an observational and reflexive position to oneself. Phenomenologically, it can be described as a meta-condition of ones consciousness which includes a sensing of cognition, emotions, memories, and thoughts, i.e., self-awareness is thinking about thoughts.
Although empirical research on non-human subjects without the ability of differentiated, reflexive communication is limited to behavioral methods, a lot of animals show meta-cognition and reflection of their own thoughts as well that of other individuals of their species (Smith 2009; Dally et al. 2006; Clayton et al. 2007; Stulp et al. 2009).

The Ability of Culture
The ability of culture is a very vague concept which may include the use of tools, language, the development of scripture, contemplation, the esthetical treatment of objects and their "misappropriation", or - in a nutshell, just the ability to gather knowledge and abilities through learning by observation and teaching.
In this basic sense, primates, dauphins, whales, and other mammals as well as some birds do have the ability of culture for they teach each other what they learned themselves (Markl 2009).

Morality
Traditional philosophy describes moral as an ability which is unique to humans, hence, it sets morality equal to the demarcation of human to non-human genus.
Modern social-biology however is in line with *Darwin* who believed as soon as 1871 already that natural selection would also include human social and moral behavior as long as it would be of advantage for the species (Darwin 1993), i.e., the human ability of morality is assumed to be a result of the same evolutionary principles which underlie their anatomy and physiological functions (Schmitz 2000).
In this sense, a rudimentary concept of fairness, empathy, and altruism has been observed in the behavior of, e.g., dogs which showed a negative reaction when other dogs were rewarded more than themselves for the same task (Range et al. 2009). Chimpanzee even show altruistic behavior by helping others, even foreigners, although there is no anticipation of any reward and although the help they provide may take a big effort (Warneken et al. 2007; Warneken/Tomasello 2009).

4. ONTOLOGICAL ASPECTS

As discussed in the previous sections, defining a mere phenomenological demarcation between humans and animals therefore necessarily yields evidence that mankind is linked to an organic world with strong physiological, behavioral, and genetic resemblance with the very substance of his body being constituted down to the components of inorganic chemistry (Farrar 1864).
Because it is decisive whether an entity is pheno- and genotypically perceived as a human being, as an animal, or as a laboratory-hybrid-creature of unknown species attribution, the sensual perception (phenomenological intuition) of the

demarcation must be balanced with an unambiguous abstract conceptual representation rooted in a consistent ontological consideration.

The Heuristic Principle of Inability

The crucial point to define the species-barrier throughout the whole debate with phenomenological concepts alone consists of having *recognized* the constraints imposed by holding to any idea of *development degree*, but having *failed to interpret* this constraint *formally*.

While human beings are without any doubt orders of magnitude removed from animals in the degree of development, the *heuristic principle of inability* (Daghbouche 2012a) accounts for this persistently failing approach by declaring the inability to define a mere phenomenological demarcation as an axiom:

No difference in *degree* can constitute a difference in *kind*.

A heuristic discussion of the species-barrier must from now on incorporate ontological assumptions which reside outside any phenomenological reach.

The Ontological Principle

The *ontological principle* (Daghbouche 2012b) allows an analytical investigation of ontological assumptions:

While it is impossible for any perceiving subject to perceive reality on principle (epistemologically), an inversion of this process yields the logical possibility of an ontological manifestation, i.e., reality may manifest itself without being subject to any epistemological restriction. Methodologically, any projection of perceiving subjects between language and perceivable (empiric) or imaginable phenomena can be classified as a hypothetic deduction (Popper 1994) while any manifestation of ontology can be regarded as axiomatic declaration with statements about ontology itself but also about the empirically real.

Applied to the current discussion, it simply motivates the consideration of revealed axioms and its specific implications.

5. AXIOMATIC DEMARCATION

A sufficient axiomatic demarcation necessarily needs to address the *generic* incarnation of the human species *per se* along with the *specific* incarnation of the individual human being in the process of human embryogenesis and fetal development.

Incarnation of Human Species

With a broad consensus within the monotheistic book tradition on Adam *generically* representing the first human being (Genesis 2:7 and 1 Cor 15:45), Quran 2:37 additionally states:

2:37 Then Adam received from his Lord [some] words, and He accepted his repentance. Indeed, it is He who is the Accepting of repentance, the Merciful.

While the aspect of Adam having received *words* may further strengthen the phenomenological concept of language ability, the abstract ontological representation only looks at the mere fact of Adam having *received* something. It is this very reception which suggests to redefine the demarcation of species with a stringent ontological causality:

Adam was the first *generic* individual of the human species *because* he was the first human-like subject of an ontological manifestation.[3]

[3] c.f. Adam as first Prophet in Islam: Wikipedia contributors. "Adam in Islam." Wikipedia, The

Incarnation of Human Individual

With regard to the *specific* incarnation of the individual human being, Quran 23:12-14 states:

23:12 And certainly did We create man from an extract of clay.
23:13 Then We placed him as a sperm-drop in a firm lodging.
23:14 Then We made the sperm-drop into a clinging clot, and We made the clot into a lump [of flesh], and We made [from] the lump, bones, and We covered the bones with flesh; then We developed him into another creation. So blessed is Allah, the best of creators.

This statement about the human embryogenesis and fetal development is further detailed in the reported tradition[4] of Muhammed (saw)[5] which is part of the axiomatic basis (Abdelwahab et al. 2014) where the periods between the stages mentioned in the Quran are further specified:

Sayyiduna Abd Allah ibn Masud (Allah be pleased with him) narrates that Muhammed (saw) said:

"Each one of you is constituted in the womb of the mother for forty days, and then he becomes a clot of thick blood for a similar period, and then a piece of flesh for a similar period. Then Allah sends an angel who is ordered to write four things. He is ordered to write down his deeds, his livelihood, his (date of) death, and whether he will be blessed or wretched (in religion). Then the soul is breathed into him…" (Sahih al-Bukhari)[6].

Based on the above axioms, the inferred period from the fertilization of the human egg cell with human sperm to the *specific* incarnation of the individual human being is conditioned with the soul entering the fetus. Accordingly, the *specific* demarcation-axiom reads:

The organic transition from a human egg cell and a human sperm to a human being takes place at around four months (120 days) after fertilization.

6. CONCLUSION

Balancing the phenomenological demarcation of the human species with an ontological one yields a clearly defined species-barrier with as well as both, a pheno- and genotypic perception (phenomenological intuition) and an unambiguous abstract conceptual representation in terms of a generic- and specific incarnation of the human being.
While defining the *generic* human incarnation may enhance evolutionary evaluations with direct implications for the observance of human dignity, the definition of the *specific* human incarnation may contribute to social and ethical considerations with regard to abortion and to designing hybrid-creatures in laboratory settings (Deutscher Ethikrat 2011).
As for the latter, the so-far inferred line of demarcation applies for *human* egg cells and *human* sperms only where the

Free Encyclopedia. Wikipedia, The Free Encyclopedia, 29 Oct. 2014. Web. 11 Nov. 2014.

[4] *Sunnah* is the specific term that refers to the Mohammed's (saw) example and guidance as a prophet, whether verbally or practically, recorded in writing and validated as *hadith* (cf. Wikipedia contributors. "Hadith." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 29 Dec. 2014. Web. 30 Dec. 2014)

[5] saw = sall Allahu 'alay-hi wa-salaam = may God pray on him and grant him peace (a traditional saying after mentioning his name)

[6] c.f. Wikipedia contributors. "Fetus." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 28 Dec. 2014. Web. 28 Dec. 2014.

genetic material is clearly defined with exclusively human origin.
It is strongly advised for further investigation to discuss the combinatorial possibilities and laboratory procedures such as transplantation, somatic cell nucleus transfer, gene transfer, chromosome transfer, embryo merger, and gamete fusion (Taupitz/Weschka 2009) to assess a valid application of the here presented ontological axioms.
It is intuitively anticipated that the axioms for the *specific* human incarnation hold, i.e., that the maximum permissible development time of any combination of human and non-human materials in the process of fetal- or embryogenesis is set to 120 days.
As for the transplantation of cells, tissues or organs of a species in a host organism of another species, one should distinguish whether the transplant was performed in an organism *after* differentiation of its organ systems or whether the materials of both organisms were pooled *prior* to an organ development (embryonic chimeras) so that a joint development took place.
In the first case, transplanted materials must be part of an already complete and functioning recipient organism, e.g., the transmission of human cancer cells in a mouse so that the application of the 120 days axiom doesn't seem problematic.
In the second case of embryonic chimeras however, whole organs or organ systems may consist exclusively or predominantly of cells from one kind or another, or evolve into hybrid forms to which they contribute cells of both species. The germ cells of the mature organism can then be derived from one of the species or even both. This can lead to an organism that seems to belong to a certain kind (phenotypically) but produces eggs or sperm of another species (genotypically).

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8. REFERENCES

Abdelwahab, E.M., Daghbouche, K., Shannan N.A. (2014): The Algorithm of Islamic Jurisprudence (Fiqh) with Validation of an Entscheidungsproblem. J. Acad. (N.Y.) 2014, Vol. 4, 2:52-87

Chimpanzee Sequencing and Analysis Consortium (2005): Initial sequence of the chimpanzee genome and comparison with the human genome. In: Nature, 437 (7055), 69–87

Claridge, M.F., Dawah, H.A., Wilson, M.R. (Eds.) (1997): Species: The Units of Biodiversity. Chapman & Hall, London

Clayton, N. S., Dally, J. M., Emery, N.J. (2007): Social cognition by food-caching corvids. The western scrub-jay as a natural psychologist. In: Philosophical Trans- actions of the Royal Society B, 362 (1480), 507–522

Daghbouche, K. (2012a): The Heuristic Principle of Inability with an Application on the Set Theoretical Linear Continuum. J. Acad. (N.Y.) 2012, Vol. 2, 1:3-20

Daghbouche, K. (2012b): The Ontological Principle. J. Acad. (N.Y.) 2012, Vol. 2, 4:160-163

Dally, J. M., Emery, N. J., Clayton, N. S. (2006): Food-caching western scrub-jays keep track of who was watching when. In: Science, 312 (5780), 1662–1665

Darwin, C. (1993): Ursprung und Entwicklung der moralischen Gefühle. In: Bayertz, K. (Hg.): Evolution und Ethik. Stuttgart, 37–48

Deutscher Ethikrat (2011): Mensch-Tier-Mischwesen in der Forschung, Stellungnahme, Deutscher Ethikrat, Berlin

Howard, D.J., Berlocher, S.H. (Eds.) (1998): Endless forms: Species and speciation. New York, NY: Oxford University Press

Kaminski, J.; Call, J.; Fischer, J. (2004): Word learning in a domestic dog: evidence for "fast mapping". In: Science, 304 (5677), 1682–1683

Markl, H. (2009): Vom Nutzen der Vergängnis, der Knappheit und des Zufalls. In: Frankfurter Allgemeine Zeitung, Feb. 11 2009, N3

Mayden, R. L. (1997): A hierarchy of species concepts: the denoument in the saga of the species problem. In: M. F. Claridge, H. A. Dawah and M. R. Wilson (Eds.), Species: The units of diversity, London: Chapman and Hall, 381-423

Pepperberg, I. M. (2002): In search of king Solomon's ring: cognitive and communicative studies of Grey parrots (Psittacus erithacus). In: Brain, Behavior and Evolution, 59 (1–2), 54–67

Frederic William Farrar, (pseud.) Philalethes (1864): *The Distinction between Man and Animals*, Anthropological Review, Vol. 2, No. 6, August 1864, pp. 153-163

Popper, Karl R., *Logik der Forschung*, Mohr, Tübingen, 1994:223- 225

Quran quotes: Saheeh International, The Qur'an: English Meanings and Notes, Riyadh: Al-Muntada Al-Islami Trust, 2001-2011; Jeddah: Dar Abul-Qasim 1997-2001

Range, F., Horn, L., Viranyi, Z., Huber, L. (2009): The absence of reward induces inequity aversion in dogs. In: PNAS, 106 (1), 340–345

Sahih al-Bukhari: The Book of the Beginning of Creation, No. 3036

Savage-Rumbaugh, E.S., Murphy, J., Sevcik, R.A., Brakke, K.E., Williams, S.L., Rumbaugh, D.M., Bates, E. (1993): Language Comprehension in Ape and Child. In: Monographs of the Society for Research in Child Development, Vol. 58, No. 3/4, i+iii+v-vi+1-252

Schmitz, D. (2000): Biologische Grenzen der Moral? Historische Entwicklung, philosophische Positionsbestimmung und heuristische Leistungsfähigkeit einer Evolutionären Ethik in der Medizin. Diss. med. Mannheim 2000 (IV, 122 pages)

Smith, J. D. (2009): The study of animal metacognition. In: Trends in Cognitive Sciences, 13 (9), 389–396

Stulp, G., Emery, N.J., Verhulst, S., Clayton, N.S.: (2009): Western scrub-jays conceal auditory information when competitors can hear but cannot see. In: Biology Letters, 5 (5), 583–585

Seyfarth, R.M., Cheney, D.L., Bergman, T., Fischer, J., Zuberbuhler, K., Hammerschmidt, K. (2010): The central importance of information in studies of animal communication. Animal Behaviour 80, 3-8

Warneken, F. Warneken F., Hare B., Melis A.P., Hanus D., Tomasello M. (2007): Spontaneous altruism by chimpanzees and young children. In: PLoS Biology, 5 (7): e184

Warneken, F., Tomasello, M. (2009): Varieties of altruism in children and chimpanzees. In: Trends in Cognitive Sciences, 13 (9), 397–402

Wikipedia contributors. "Adam in Islam." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 29 Oct. 2014. Web. 11 Nov. 2014

Wikipedia contributors. "Fetus." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 28 Dec. 2014. Web. 28 Dec. 2014

Wikipedia contributors. "Hadith." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 29 Dec. 2014. Web. 30 Dec. 2014