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ON THE INEVITABILITY OF PERSONIFICATION IN DARWIN'S *ORIGIN OF SPECIES*

1. Introduction

Darwin's theory as presented in his book *On the Origin of Species* of 1859 is based on many conceptual metaphors. The best recognized are the metaphors based on the source domains of struggle, family, tree and journey, as well as ontological metaphors (cf. Drogosz 2008, 2009; see also Young 1985; Beer 2000 [1983]; Ruse 2003, Al-Zahrani 2008). In this study we would like to focus on personification alone. We would like to address the following questions: Why did Darwin use personification although he was openly criticized for using (or even overusing) it?² Why were his attempts to remove it or at least diminish its impact in later editions of the book unsuccessful? Why was he criticised for personifying nature and natural selection

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² According to Michael Ruse, a contemporary philosopher of biology "Darwin wanted to claim that natural selection has nothing to do with conscious selective decisions. But there was a pervasive feeling that selection of any kind implies consciousness. At the very least, critics thought, Darwin's language was unduly anthropomorphic" (Ruse 1999: 208).

while other personifications went unnoticed? And what were the consequences of personification for the theory?

The issue of personification in the *Origin* has been discussed by many scholars, most significantly by Young (1985) and Beer (2000 [1983]). While acknowledging the value of these studies, we believe that an interesting explanation for the apparent inevitability of personification in Darwin's theory and argumentation can be provided by applying a Cognitive Linguistics perspective. This approach will allow us to reveal a number of interrelated reasons which pressed Darwin to use personification almost against his will: some deriving from the theory itself (i.e. the analogies and metaphors employed by Darwin), others from the general cultural background of both Darwin and his readers, still others coming from the language and its conceptual foundations. While we shall present these reasons in a sequence, it must be emphasised that they all act simultaneously, supporting each other.

2. Personification of nature and natural selection

The fundamental claim that Darwin makes in the *Origin of Species* is that the amazing diversity of nature can be explained in non-religious terms and that within nature itself there exist mechanisms and principles responsible for the emergence of new species and for replacing older forms found in fossils. He argues further that small modifications within a species when accumulated over long periods of time and transferred to subsequent generations will give significant modifications and, finally, a new species will emerge, different from its original form and probably better adapted to its environment. Consequently, there is no need to call for divine power to account for the presence of species as we know them (both present and extinct). It is sufficient to recognize processes operating in nature.

Throughout the *Origin* Darwin tries to describe these processes in a language carefully avoiding religious associations, even the words *create* and *creatures* are consistently replaced by *produce* and *productions*³. He also proposes the existence of a principle responsible for the "production" of new forms and new species, that is natural selection. This notion, crucial for the whole theory is defined by Darwin as follows: "*I have called this principle, by which each slight variation, if useful, is preserved, by the term of Natural Selection*" (1998: 52) and further "*This preservation of favourable variations and the rejection of injurious variations, I call Natural Selection*" (1998: 68).

³ Even a count of words *produce*, *production*, *create* and *creation* is telling: *produce* occurs 226 times in the text of the *Origin*, and *production* 110 times; the figures for *create* and *creation* are significantly lower: 54 and 8.

The concept of natural selection together with the concept of broadly understood nature were to make God or any supernatural agent unnecessary in Darwin's account of biological diversity and regularity. However, the problem Darwin encountered was that while it was possible to postulate the existence of a principle of natural selection, it proved to be practically impossible to write about nature and natural selection without the kind of language which was typically associated with personified God as attested by quotations in (1-10)⁴.

1. ...as man can certainly produce great results by adding up in any given direction more individual differences, so could Nature, but far more easily, from having incomparably longer time at her disposal. [69]
2. Nature acts uniformly and slowly during vast periods of time on the whole organisation, in any way which may be for each creature's own good; and thus she may, either directly, or more probably indirectly, through correlation, modify the reproductive system in the several descendants from any one species. Seeing this difference in the process of selection, as carried on by man and nature, we need not be surprised at some difference in the result. [218]
3. ...and see whether Nature does not reveal to us her method of work. [183]
4. It may be said that natural selection is daily and hourly scrutinising throughout the world, every variation, even the slightest, rejecting that which is bad, preserving and adding up, whenever and wherever opportunity offers, at the improvement of each organic being in relation to its organic and inorganic conditions of life. [70]
5. But in all cases natural selection will ensure that modifications consequent on other modifications at different period of life, shall not be in the least degree injurious: for if they became so, they would cause the extinction of the species. [72]
6. ...natural selection destroying any which depart from the proper type. [86]
7. ...natural selection will always succeed in the long run in reducing and saving every part of the organisation. [122]
8. ...the very process of natural selection tends (...) to exterminate the parent forms and the intermediate links. [146]
9. ...and natural selection will pick out with unerring skill each improvement...[154]
10. As natural selection acts by life and death—by the preservation of individuals with any favourable variation, and by the destruction of those with any unfavourable deviation of structure. [159]⁵

⁴ This is a very limited selection of countless examples in which Darwin somehow personifies natural selection or nature. All the examples come from the 1998 Oxford edition of Darwin's book and page numbers in brackets make reference to this edition.

⁵ Examples of personification of natural selection can be found in all contemporary texts on the theory of evolution as well. To give just a few examples:

1. Natural selection could cause variation within species (Ruse 1999: 205)
2. ... natural selection (...) changes one species into another (Ruse 1999: 206)
3. Does natural selection choose between species? (Dawkins 2006: viii)
4. ...which level in the hierarchy of life will turn out to be the inevitably 'selfish' level, at which natural selection acts? (Dawkins 2006: viii)
5. Natural selection therefore sees to it that gangs of mutually compatible—which is almost to say cooperating—genes are favoured in the presence of each other. (Dawkins 2006: x)

As we can see from the examples, both nature and natural selection are conceptualized as sentient agents (which means personification), though there is a difference in the way nature is personified. Following the long tradition of the Mother Nature personification, Darwin talks about nature as a female figure (which is linguistically manifested by the use of the pronoun *she*). However, for Darwin nature is more like a gardener or breeder producing new varieties or species of organisms (1-3) than a mother⁶. In order to distinguish personified nature from the natural environment, Darwin uses the capital letter. Natural selection, on the other hand, is sexless, an “it”, which, however, does not diminish the force of personification, as the choice of verbs used to describe its “actions” are typical of a human being. Thus natural selection is undoubtedly conceptualized as an agent (4-10).

While the personification of nature was almost conventional, natural selection was a new concept introduced by Darwin so its personification was Darwin’s decision. As he was strongly criticized for personifying nature and natural selection, Darwin tried to alter it. His struggle with personification is reflected in the revisions he introduced into the later editions of the *Origin*. As Gillian Beer observes in her introduction to the 1998 Oxford edition, in the 2nd edition of the *Origin* (1860) the word “metaphorically” is added to the sentence in (4): “*It may metaphorically be said that natural selection...*”. In the 3rd edition (1861) he openly writes: “*So again it is difficult to avoid personifying the word Nature; but I mean by Nature, only the aggregate action and product of many natural laws...*”. In the same edition he complains that when Newton “*speaks of the attraction of gravity as ruling the movements*”, no one accuses him of unjustified personification. In the following sections we are going to demonstrate that Darwin lost his struggle with personification because too many factors, many of them inherent in the text and theory, conspired against him.

3. The scenario of creation and the scenario of evolution

The fact that Darwin’s idea of evolution was to substitute the idea of creation is perhaps the most obvious source of personification in the text of the *Origin*. The scenario of creation entrenched in public awareness involves the Creator (God), conceptualized as a sentient and intelligent agent who intentionally creates the world. In the 19th c. God became explicitly compared

As we saw in the case of the butterflies, natural selection may unconsciously ‘edit’ a gene complex by means of inversions (Dawkins 2006: 39)

⁶ An extensive analysis of Darwin’s concept of nature can be found in Drogosz (2008).

to a designer of all species of organisms (cf. Paley's *Natural Teleology* of 1802 and his famous watchmaker analogy). In this scenario species are individually created at given moments of time and remain unaltered, and God himself becomes strongly personified. In his scenario of evolution laid out in the *Origin of Species*, Darwin did not question the role of God as the ultimate source of life, but he questioned the dogma of immutability of species and God's active role in introducing new species. He claimed that species do change and that the accumulation of these changes leads to the emergence of new species. However, the juxtaposition with the scenario of creation left the role of agent (filled by personified God) vacant, and in the scenario of evolution this role could only be filled by nature and by natural selection (cf. Beer 2000: 64). It is clear why nature could become an agent: its conventional personification was easily available. Explaining why natural selection could be conceptualized as an agent is more complex. One motivation, the syntactic one, will be discussed later in the paper. The other motivation is connected with the fact that Darwin thought of natural selection as a principle, a law of nature. There is a strong tendency in language to depict laws (natural and man-made) as agents, for example, law of gravity makes objects fall and tax law makes people pay taxes⁷. By virtue of the metaphor LAW IS AN AGENT, the concept of natural selection could also become conceptualized as an agent and fill this slot in the scenario of evolution.

4. An analogy with artificial selection

Another significant source of personification comes from the analogy Darwin draws between modifications of domestic animals and plants performed by breeders and gardeners (i.e. artificial selection) on the one hand and changes that organisms undergo in the state of nature on the other. This analogy was very important for Darwin. It extends through first four chapters of the *Origin* and concludes with a diagram of branching lines of descent. Darwin's argument was straightforward but strong: if man can produce new varieties of domestic plants and animals by carefully selecting desired features, then the same can take place in nature if organisms which possess some features tend to survive and pass these features on to the next generation. Given the long span of time, this would result in the appearance of not just

⁷ The potential of this metaphor is visible even in texts written by linguists. For example, Ibañez (1998) writes about the Invariance Principle in the following way:

- 1) The Invariance Principle sets constraints on correspondences...
- 2) ... this would violate the restrictions imposed by the Invariance Principle on the nature of correspondences...
- 3) The Invariance Principle deals exclusively with image-schematic structure...

new varieties but new species. Judging from the structure of the text, Darwin introduced this analogy for explicatory purposes hoping that it will be a convincing way to introduce the notion of natural selection, but it turned out to have significant side-effects.

Artificial selection motivates the personification of nature in a very straightforward way by drawing the following parallels:

Table 1. The parallels between artificial and natural selection

ARTIFICIAL SELECTION	NATURAL SELECTION
a human breeder/gardener	(Mother) Nature
domestic animals and plants	organisms in their natural environment
selection of animals and plants which bear traits desired by the breeder/gardener	survival of organisms which bear traits advantageous for them
animals and plants are modified; new varieties are produced	organisms are modified; new species emerge

These parallels were clear for Darwin as we can see in the following longer quotation:

11. As man can produce and certainly has produced a great result by his methodical and unconscious means of selection, what may not nature effect? Man can act only on external and visible characters: nature cares nothing for appearances, except in so far as they may be useful to any being. She can act on every internal organ, on every shade of constitutional difference, on the whole machinery of life. Man selects only for his own good; Nature only for that of the being which she tends. Every selected character is fully exercised by her; and the being is placed under well-suited conditions of life. Man keeps the natives of many climates in the same country; he seldom exercises each selected character in some peculiar and fitting manner; he feeds a long and a short beaked pigeon on the same food; he does not exercise a long-backed or long-legged quadruped in any peculiar manner; he exposes sheep with long and short wool to the same climate. He does not allow the most vigorous males to struggle for the females. He does not rigidly destroy all inferior animals, but protects during each varying season, as far as lies in his power, all his productions. He often begins his selection by some half-monstrous form; or at least by some modification prominent enough to catch his eye, or to be plainly useful to him. Under nature, the slightest difference of structure or constitution may well turn the nicely-balanced scale in the struggle for life, and so be preserved. How fleeting are the wishes and efforts of man! how short his time! and consequently how poor will his products be, compared with those accumulated by nature during whole geological periods. Can we wonder, then, that nature's productions should be far "truer" in character than man's productions; that they should be infinitely better adapted to the most complex conditions of life, and should plainly bear the stamp of far higher workmanship? [69-70]

The analogy makes use of the conventional Mother Nature personification. Darwin used this metaphor consciously and for rhetorical purposes but it was of little use for his theory: personified Nature was not more scientific than personified God. As we know, in his scenario of evolution the agen-

tive role was ascribed to natural selection, but from these parallels it is not clear how natural selection, which is a process, a “method of work” of Nature, could be promoted to this role. We claim that the factors which enabled Darwin to personify natural selection and which, in fact, made it the core of his theory come from the realm of sentence structure and its conceptual grounding, and not from the theory itself.

5. Syntactic motivation of personification

As Gillian Beer (2000 [1983]: 47-49) rightly observes

Darwin faced four major problems in precipitating his theory as language. (...) First, language is anthropocentric. It places man at the centre of signification. (...) Second, language always includes agency, and agency and intention are frequently impossible to distinguish in language. (...) His theory had no place for an initiating or intervening creator. (...) Yet terms like ‘selection’ or ‘preservation’ raise the question. (...) Third, he faced a more particular problem concerned with the natural historical discourse he inherited. (...) The fourth problem of language that Darwin faced was that of addressing himself towards a general readership as well as to his confraternity of scientists. (Beer 2000[1983]: 47-49).

We want to expand Beer’s explanation adopting a Cognitive Grammar perspective.

We believe that the syntax of the English language is a strong yet underestimated source of personification in Darwin’s text. Syntactically, a well-formed English sentence requires an overt subject and the sentential subject is prototypically associated with the sentence theme. Thus, whenever Darwin was writing about natural selection or nature, putting it in the sentence subject position was a natural choice. Because of the conceptual grounding of the transitive sentence the subject position promoted the natural selection to the status of an agent. In what follows we shall discuss briefly the conceptual grounding of the English clause and then we shall show its relevance for Darwin’s personification.

Langacker (1991: 285) proposes that syntactic categories (e.g. subject or object) and semantic roles (e.g. agent or patient) have grounding in the way people perceive the world and interact with it. According to Langacker, the action chain model with the energy source and energy sink underlies the event model incorporating the role archetypes of agent, patient etc. A similar approach is adopted by Kemmer who proposes a model for the two-participant event defined as follows:

A prototypical two-participant event is defined as a verbal event in which a human entity (an Agent) acts volitionally, exerting physical force on an inanimate definite entity (a Patient) which is directly and completely affected by that event (Kemmer 1993: 50).

Both authors observe that the subject of a transitive clause is prototypically associated with a human agent who consciously and intentionally initiates an action, which results in a change. We can safely say that this is one of the areas where the anthropocentric character of language is best visible. However, as convincingly demonstrated by Adele Goldberg (1995) and studies on grammatical constructions, a construction can be easily extended from its prototypical application to cover new situations, for example situations in which an inanimate force is perceived to be responsible for an action and a change resulting from it. Then this force becomes conceptualized as an agent and is encoded linguistically as the sentence subject. That is why the same construction can be used in (12) and (13)

12. Jim closed the door.
13. The wind closed the doo.

although in (13) the “agent” is inanimate and there can be no intention on its part.

When Charles Darwin was trying to put into words what he conceived of natural selection, he was in fact using English and its syntax to describe notions no one had described before. He was, however, restricted by the resources of his language and by the anthropocentric perspective fossilized in it. He definitely intended to describe natural selection as inanimate, non-sentient and non-intentional (at least this is what he frequently repeated in his letters and notes). He was writing about natural selection using constructions such as (13). However, the subject position permits the interpretation of sentience and intentionality, as in (12), which in the case of inanimate referents yields personification. The situation is complicated by the fact that in the case of (13), the listener/reader has the experience to interpret the sentence correctly, that is no intentionality is attributed to the wind. In the case of the ‘actions’ of natural selection, the readers do not have any first-hand experience of what natural selection is and what it does, that is why more interpretations are possible, not necessarily following Darwin’s line of reasoning.

The above discussion shows how natural selection, which is a process and a principle, by becoming a sentence subject gained the status of an agent, which easily developed into a full-fledged personification. We have also demonstrated that artificial selection and the competing scenario of creation have slots for a sentient agent thus motivating the personification of nature

and natural selection. What remains to be explained is why the whole issue of an agent was important in Darwin's theory.

6. The concept of change in Darwin's theory

The pressure for an explicit agent comes from the subject matter of the theory itself: the concept of change. Our experiential model of change involves a source of change, something that causes or instigates this change and an entity affected by this change. In our experience this source of change can be internal (that is something changes itself) or external. The foundation of Darwin's theory, as we have said, was that the forms of organisms are not stable in time but it left the issue of the source of changes to be solved. Both conceptually and linguistically Darwin had only two options: to treat organisms as active in the process of the modification, give them the role of the agent and code them linguistically as the sentence subject, or to treat them as passive in the process of modification (as in the process of artificial selection) and to propose an external source of change⁸. In fact, the option that the changes are instigated by organism themselves was closed to Darwin because of the ridiculed theories proposed by Jean-Baptist Lamarck. Thus Darwin had to opt for the external source of changes, some kind of agentive force⁹. It could not be God, personified Nature would not work either, so he settled for natural selection. And again, as in our experience the default source of change is a human agent, the personification of natural selection was inevitable.

7. Conclusion

Let us now return to the questions we put at the beginning of this paper. The first question concerned the reasons for the use of personification. Darwin had no choice but to personify nature and natural selection because of several combined factors:

⁸ Interestingly, the agent role in the scenario of creation is also experientially based: organisms exist so they have to have an origin. In our experience, the human being originates the existence of many complex object, thus living organisms, so astonishingly complex, must have been originated by a being infinitely more powerful and perfect than man, namely God (which is one of the arguments for the existence of God).

⁹ The view that organisms are passive and that they are shaped by an external factor is actually shared by creationism and evolutionism. They differ only in assigning the agentive role to God or natural selection, and both extensively use personification.

- (i) the experientially based concept of change demands an agent, be it internal or external;
- (ii) the sentence subject position is prototypically associated with a sentient agent who intentionally initiates an action;
- (iii) the natural selection is personified by virtue of the metaphor LAW IS AN AGENT;
- (iv) personification of Nature (i.e. Mother Nature) was available in language and culture;
- (v) the scenario of creation and artificial selection have the role of sentient and intelligent agent.

These factors made it practically impossible for Darwin to avoid personification in his book. All of them were an inherent part of the theory and his argument, and he could not remove any of them without destroying its coherence. On the other hand, removing personification from language would only be disastrous for the style: it would mean overusing passive voice and impersonal constructions.

Let us turn now to the next issue: Why was Darwin criticised for personifying nature and natural selection while other personifications went unnoticed? In fact, Darwin's text is full of constructions analogous to those relating to nature and natural selection. Consider just a few:

- 14. ... climate acts in main part indirectly by favouring other species. [58]
- 15. Such facts show how indirectly the conditions of life must act. [110]
- 16. Disuse by itself seems to have done its work. [113]
- 17. ...that instinct impels the cuckoo to migrate and to lay eggs in other birds' nests. [176]
- 18. In some cases compulsory habit alone has sufficed to produce such inherited mental changes; in other cases compulsory habit has done nothing (...) but in most cases, probably, habit and selection have acted together. [176]

However, to our knowledge no one has ever criticised Darwin for personifying climate, conditions of life, disuse, instinct or habit. We believe that it is precisely the combination of the factors in (i-v) that leads his readers “*to personify natural selection and to see it as an active, intentionalist force*” (Beer 2000 [1983]: 62). Syntactic factors without the analogy with artificial selection and the competing scenario of evolution would not necessarily yield personification (as in the case of examples 14-18)¹⁰. On the other hand, be-

¹⁰ The frequency of use is probably relevant as well. The concepts such as habit or climate are only mentioned by Darwin while the natural selection, as to be expected, is extensively discussed. It means that a variety of expressions are used enriching the image of the natural selection.

cause the concept of change, the human breeder and the divine creator opened up the space for the sentient agent, syntactic constructions (and obviously vocabulary) congruent with such an agent were recruited.

Most probably Darwin did not anticipate the consequences that personification would have for the theory. Firstly, because natural selection was made the external source of modification, the agent, an analogue of human breeder/gardener and divine creator, the idea of intentionality and purpose was introduced into the theory no matter how strongly Darwin and his followers denied it. Secondly, because an external agent was to be responsible for modifications of organisms, there was no place in mainstream biology for an investigation of possible internal causes of variation (cf. Emmeche and Hoffmeyer 1991). Consequently, Darwin and modern biologists conceptualise organisms as passive in the process of evolution: they not so much evolve as undergo evolution. What is more, Darwin's repeated use of the words *produce* and *production* in reference to the emergence of new species reinforces this impression of passivity to the point of reification.

Darwin had an idea, a shape of a theory. He had to put this shape into concepts and language to convey the theory to the public. His choice of conceptualizations and words was an act of will, but conceptualizations interact with each other and one metaphor calls for other metaphors. Not everything was in Darwin's control, definitely not interpretations his readers would derive from the text. Language and underlying conceptualizations did not allow Darwin to express his views in a way fully consonant with his intentions. That is why till the end of his life he kept explaining what he meant.

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ABSTRACT

On the inevitability of personification in Darwin's *Origin of Species*

Key words: Darwin, conceptual metaphor, personification

The paper investigates the sources of the personification of nature and natural selection in the work *On the Origin of Species* by Charles Darwin. The study based on the Conceptual Metaphor theory and Cognitive Grammar has demonstrated that Darwin's use of personification is motivated by multiple interrelated factors such as the concept of change, conceptual grounding of the sentence subject, an analogy with artificial selection, the competing scenario of creation and the pre-existing personification of Mother Nature. The analysis has revealed that in spite of criticism, Darwin was unable to remove personification from his theory without destroying the coherence of his argument and the style of the text.