

**In The Name of
God**



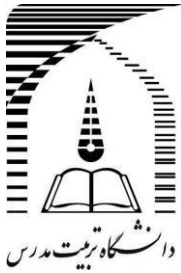
Majalle Falsafe
Biannual Journal of Philosophy Student's Association at TMU

**Special Issue for
World Day of Philosophy 2017
and
4th Student Philosophy Conference**

Manager in Charge: Hatam Moallem
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An evolutionary model for science and problem of progress

Mehde Hatef

Phd student

Iranaian Institute of philosophy

Hatef.mehdi@gmail.com

Evolutionary models for scientific change are generally based on the analogy between processes operating within science and biological evolution. Among these models, Hull's model is discussed because it is, in my opinion, the most deliberated evolutionary model for scientific change. The problems discussed here but are general problems involved in the evolutionary models concerning science.

Hull's main claim in his evolutionary model is that there is a general notion of the selection process, which brings about both natural selection process, working on biological units in biological environment, and conceptual selection process, working on conceptual units in scientific environment. Based on the general notion of selection process, he set an analogy between mechanisms of biological and scientific worlds. Accordingly, the working mechanisms in biological evolution and scientific development are the same, have the same rules and logic, and work on units that properly correspond at the abstract level

It is clear that soundness of this analogy depends on how selection agents and rules working in these two domains correspond. Therefore, Hull tried to introduce corresponding constituents in science for the essential concepts used in explaining natural selection process, such as replicator, interactor, lineage, adaptation and fitness. The power of this analogy, therefore, depends on the extent to which these concepts mean and work similarly within two domains. Some cases of dissimilarity, however, challenges this analogy. A case discussed in this essay is that despite the biological evolutionary process, which is known non-progressive, science is a phenomena which inclined to be known progressive. The problem of global progressiveness in selection process is what I'm concerned with in this essay.

This dissimilarity is a result of Hull's two separate claims; On the one hand, he denied the global progressiveness of the evolution and defended its local progressiveness. On the other hand, he saw science as a progressive enterprise which aims to understanding stable regularities of the nature. As a realist, Hull believed that beside variant aspects of the nature, there are some stable

regularities, spatiotemporally unconstrained, whose understanding forms the goal of scientific practice.

Hull's solution to this problem was to see dissimilarity not a result of the difference in selection processes themselves, but a consequence of the difference in environments of these processes, thereby tried to save the general concept of selection process (Hull, 1988: 466).

Progress in evolution

Hull disagreed with the "global progress" in evolution, although defended the "local progress" thesis (Hull, 1988: 466). As candidates in terms of which progress can be formulated, Hull indicates the number of organisms, overall biomass, number of species, complexity and adaptability of organisms, variety of structural plans exhibited, amount of energy transduced, efficiency of energy conversion and number of adaptive zones and/or niches occupied. However, he finally sees none of them good bearer for global progress, which lead him to the local progressiveness thesis for evolution.

Hull's solution revisited

Hull's solution is to make the environments, in which the processes of natural selection and conceptual selection are operated, responsible for the difference. According to him, while we have a general notion of selection process the differences like progressiveness come back to differences in the environments in which the processes operate. This solution involves a distinction between selection process and environment.

I'll argue against this solution, by providing two reasons that prohibit eliminating the environment from selection process, and when they cannot be detached the general notion of selection process would necessarily ruin. My claim is that selection process both conceptually and causally is tied with environment. Therefore the difference in an important feature of two environments will naturally differentiate in selection processes.

1. Hull formulates natural selection by appealing to two concepts, borrowed from Dawkins (1998), as its basic entities; replicator and interactor. Hull's functional definition underlines the interaction within interactor, and since interaction is an operation supposed to run in relation to the environment, such a definition makes the environment conceptually tied with the interactor. Moreover, this relation is a causal relation, as Hull emphasized in his previous definition of this concept; Interactors are special entities that "must interact causally with their environments in such a way as to bias their distribution in later generation.

Hence, the nature of varied units is a result of the interaction between variety of interactors and environmental differences. It means that has insisted

on the agent's part and omitted the other feature, i.e. the environment. Besides, Hull's fourth notion in selection process, i.e. the lineage, is formed through interaction with environment too, and as far as selection is done on lineages and they are formed in interaction with environment, the selection cannot detach from the environment. Due to its causal part, consequently, the environment cannot be understood outside the selection process (Cain & Darden, 1988). It seems that excluding the environment from the selection process is possible only for who takes an internalist approach to entities constitutive of natural selection process.

We are in a crucial situation; on the one side, as Hull himself took it, this dissimilarity is so harmful to the structure of analogy that we cannot omit it. On the other side, Hull's solution is not satisfying. The way to escape the dilemma seems to find another way? Let me reconsider the challenge by concentrating on the other side, i.e. the progress in science, to see is it possible to dissolve the dissimilarity by adjusting the idea of scientific progress?

Progress in science

How did Hull believe that science is totally progressive? The stable goal of science, to Hull, is awareness of those aspects of the world that remain constant, something which he called them "spaciotemporally unrestricted regularities in nature". The successive approximations of scientific theories to these eternal, immutable regularities are responsible for global progress in science (ibid:467). These regularities provide for Hull the possibility conditions of nature as the object of nomological, scientific study, while denying them makes both nature (opposed to chaotic universe) and science impossible.

Indeed, I'll argue that according to Hull's understanding of scientific change the idea of general progress of science is controversial. In the first argument, I'll show that history of biology doesn't support the availability of a rectilinear Way to a goal. In the second, I'll argue that Hull's externalist conception of science and his view of conceptual fitness don't allow such a conception.

1. In his account of the controversy between idealist morphologists and evolutionary systematists in nineteenth century, Hull shows that the controversy, rather than being on theories, was on the notion of explanation itself and the nature of genuine science. In fact, not all scientific controversies are about better explanans, but a considerable part of them is about the formulation of explanandum in a discipline (Griffiths, 2000:305). The result is that talking about the unique goal and direction for science is not compatible with Hull's historical account of biology.

2. Hull defines fitness of conceptual replicators or ideas, *prima facie*, in terms of their scope in scientific society, i.e. the idea's domain of applicability by other scientists, its impacts on the other works and references to it. Consequently, the fitness of an idea is measured by its range of influences on the other scientists. As Hull's externalist approach requires, the factors effective on idea's reception by scientists go beyond epistemological features, and include professional interests, discipline relations, education and their genealogical associations.

However, Hull mentions another factor that affect the fitness; *evidence*, which also secure the realistic aspect of his view. Discussing this factor is required when we ask from the frequent references to a theory. Therefore, the adaptation would be a two variable function of credit and scientific evidence (Strelney, 1994: 49). According to Hull's externalist approach to science and considering a part non-epistemological features take in the process of theory generating and competition between them, the evidence are not the only participants in a process of theory selection. Other factors may play further role in producing credit for a scientist. Assuming it, there is no guarantee that the spread of an idea is a result of only its theoretical virtues.

As Ruse argued "at least in theory it is possible that a false idea (judged against the best evidence) gets accepted and a true idea rejected, simply because the false idea is promoted by the scientist with the superior political skills" (Ruse, 1995: 125). So it is not guaranteed that required movement toward the ultimate goal of science i.e. regularities of nature. This problem represents a tension that exists between any externalist conception of science and a realist one.

The consequence of this claim is that like biological selection in which the global concrete goal for tree of life, i.e. the optimal situation toward which those organisms are guided, seems inaccessible, in conceptual selection we hardly can talk about a stable global goal for scientific enterprise. Hence, as far as the evolution is not progressive, science is non-progressive too.

Return to dilemma

However, theoretical progress is not the only possible form of progress in science. There are some philosophers who treat the progress of science in just the same way that G.E. Moore treated the problem of external world. To them the global progressiveness of science is obvious in as much as one prefers to regard the rival's argument defected (*ibid*). In addition some prefer to investigate the progress in a long period of time, for example from ancient age to now, and see the overall technological progresses as an evidence for progress

of science (Rowbottom,2010). Others prefer to defend the progress in science in terms of its problem-solving effectiveness (Laudan,1978). Generally there are different ways weakening the idea of scientific progress to be more defensible, by leaving a theoretical, cumulative, rectilinear, forward-looking and goal-directing view of progress (Losee,2004).

But, is it possible to save the idea of progress in Hull's framework through such adjustments? As far as the problem is the tension between his externalism and progress, it seems that it is, provided that a condition is satisfied: anything that scientific progress is defined in terms of which must be correlated with credit in scientific society. The reason is to block, in advance, any way in which the progress element and credit might conflict. Understanding progress in such a way undermine the theoretical aspect of progress and underlines its practical aspect.

But can such an adjustment solve the main problem, i.e. the tension between progress in science and biology, to save the evolutionary analogy? To solve this tension it seems that two conditions should be satisfied. First, like the previous case, anything that scientific progress is defined in terms of which must be correlated with credit in scientific society. Second, science should be understood at least *locally* progressive. As evolution could be progressive toward a more adapted situation in a stable environment, science could be locally progressive, as far as scientist's credit is correlated with scientific standards, within a paradigm and concerning specific problems. Without these adjustments, there is no way but to reduce our expectation from the evolutionary analogy's effectiveness and be more cautious using it

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An unavoidable inconsistency in Schopenhauer's philosophy

Amirreza Abachinejad Asl
Bachelor of Philosophy
The University of Tehran
Amirreza.abachi@gmail.com

Introduction

In the world Schopenhauer depicts, man is always involved in pain or boredom. Fulfilling contentment and abandoning the pain seems impossible due to human nature. Schopenhauer, however, in the third book of *The World as Will and Representation* presents the aesthetic contemplation as a unique act, which fundamentally differs from rest of our deeds. In his view, aesthetic contemplation is the only way to escape life's pain. Nevertheless, I believe aesthetic contemplation, as Schopenhauer illustrates, contradicts the essence of his philosophy. Therefore, to prove my claim, I will follow these steps in this paper: First, by examining *will* as the essence of the world in two realms (phenomenal world and ideas), I will give an approximate picture of the world Schopenhauer presents. Second, I will concentrate on human as a specific appearance of *will* to extract particular attributes of his acts. Finally, after illuminating Schopenhauer's view on aesthetic contemplation, I will develop my idea that transcending individuality and emancipation from pain by aesthetic contemplation is impossible and presupposes contradiction in the fundament of his philosophy. I think aesthetic contemplation is not an exceptional act, but it is the same as other acts by nature. Consequently, it leads to the same destiny: pain and boredom.

First part: The world as will

According to Schopenhauer, the essence of the world is *will*, which, in itself, is blind, free, infinite, changeless, and a unit that neither has background nor goal. *Will* in itself is a ceaseless striving that reveals itself in two realms¹:

1- Apparent world: The world including objects, living entities, their acts, and the rules of nature is the objecthood of *will*.² The phenomenal world is neither

¹ Arthur Schopenhauer, *The World as Will and Representation* (Cambridge: Cambridge University Press, 2010), 177, 187, 189, 335, 338, 347.

² *Ibid.*, 168.

distinctive from *will* nor its effect, but it expresses *will*, which emerges at the place and time under the principle of sufficient reason.³

2- Ideas: Schopenhauer considers ideas as a realm between the *will* as a thing in itself and apparent world. Ideas, same as appearances, are *will* by nature; they are the immediate objectifications of *will*.⁴

Second part: Human as an expression of *will*

Possessing reason and intellect, humans differ from other phenomena of *will*. Schopenhauer, however, argues willing is the essence of humans. Reason and intellect have a secondary role in his nature.⁵ The important point in the philosophy of Schopenhauer is that our deeds and behaviors proceed from our intellectual character, not our reason. According to Schopenhauer, whatever we deliberately do is based on a motive rooted in our *will*.⁶ Our individuality, which includes our desires, distinctive features, demands, and so on, is pre-determined as our intellectual character by *will*. Motives are not the essence and real cause of our acts, but “they only determine its expression at a given point in time”.⁷ It is the intellectual character of each person as a determined, immediate, and unchangeable emergence of *will* (idea)⁸ that determines his general attitude in life. It is reason’s duty to serve the *will* (intellectual character in this case) by providing suitable motives in various conditions.⁹ “Motives do not determine people’s characters, but rather only the appearance of their characters; and thus their deeds; motives determine the external shape of the course of a life, not its inner meaning and substance: these follow from the character, which is the immediate appearance of *will* and thus groundless”.¹⁰

Schopenhauer defines pain as an obstacle in the route of *will* toward its goal.¹ Man is pained until he accomplishes his demand. When he fulfills the goal, the created pleasure would be temporary and will turn to boredom if he has not aimed to another demand out of his nature. That is, “its life swings back and forth like a pendulum between pain and boredom”.²

³ Ibid., 131, 134, 145.

⁴ Ibid., 191-192.

⁵ Ibid., 151.

⁶ Schopenhauer, *WWR Voll, 149*; Arthur Schopenhauer, *The World as Will and Representation Vol2* (New York: Dover Publications, 1969): 342.

⁷ Schopenhauer, *WWR Voll, 131*.

⁸ Schopenhauer, *WWR Voll, 183*.

⁹ Schopenhauer, *WWR Voll2, 210*.

¹⁰ Schopenhauer, *WWR Voll, 163*.

¹ Ibid., 336.

² Ibid., 338.

Third part: Aesthetic contemplation as the way to escape the pain

Schopenhauer discusses aesthetic contemplation as a unique cognition.¹ According to his philosophy, “all suffering proceeds from willing”.¹ We will suffer as long as we are objecthoods of the *will*. He, however, believes there is a way in which man escapes from the chain of *will* by transcending his individuality.¹ By this exceptional cognition, the individual will turn to a pure subject of cognition that cognizes the ideas.¹ 6

In Schopenhauer’s philosophy, the main function of intellect (the faculty of cognition) is to understand the objects and the relations between them to help the *will* to fulfill its needs. But, Schopenhauer claims the story is different in aesthetic contemplation. Through this exceptional cognition, the will-less subject (pure subject of cognition) just looks for knowing the essence of the ideas. “We stop considering the Where, When, Why and wherefore of things but simply and exclusively consider the what”.¹ Through aesthetic contemplation “knowledge turning away entirely from our own *will*” and “all possibility of suffering is abolished”.¹ 8

Now, if the pure subject of cognition is not an individual subject (the apparent and embodied expression of the *will*), we can consider two assumptions about the whatness of the pure subject of cognition:

- 1- It is independent of *will*. Here, the intellect would abandon the *will* and become an independent substance.
- 2- It is still an objecthood of *will*, but as an idea. According to this assumption, the intellect cannot totally escape the domination of *will*, but it transcends the phenomenal world to the domain of ideas.

By analyzing both assumptions, I will demonstrate their inconsistency in Schopenhauer’s philosophy:

Schopenhauer argues the essence of human is *will* and “cognition in general, rational as well as merely intuitive, proceeds originally from the *will* itself”.¹ In fact, “by way of comparison, it can be said that the *will* is the substance of man, the intellect is the accident”.² So, how is it possible for an accident to become independent of substance? How is it possible for intellect to ignore the *will* and

¹ Ibid., 177. 3

¹ Ibid., 256. 4

¹ Schopenhauer, *WWR Voll*, 234; Schopenhauer, *WWR Vol2*, 371.

¹ Schopenhauer, *WWR Voll*, 201-202.

¹ Ibid., 201. 7

¹ Schopenhauer, *WWR Voll*, 247.

¹ Schopenhauer, *WWR Voll*, 177.

² Schopenhauer, *WWR Voll*, 143.

become the pure subject of cognition?² If it is feasible, our cognitive faculty (intellect) is not the accident of *will*, but it is a substance on its own. (According to Schopenhauer's discussions on the concept of artistic creation, not only the intellect- during the aesthetic contemplation- abandons *will* and sets itself free, but also it dominates it, since aesthetic contemplation of the pure subject of the cognition prompts the individual to create artistic work. Intellect would be the impellent of *will*). However, it contradicts the fundament of Schopenhauer's philosophy, which states the substance of the world is merely *will* and "there is nothing outside of it".²

In addition, if the pure subject of cognition is to escape the chain of *will*, how does Schopenhauer ascribe pleasure and happiness to it?² Pleasure and pain are effects of satisfaction or dissatisfaction of *will*.² "When an obstacle is placed between it (*will*) and its temporary goal, we call this inhabitation *suffering*, on the other hand, the achievement of its goal is *satisfaction*, contentment, happiness".² For the following reasons, assuming the pure subject of cognition as an immediate objectivation of *will* (idea) is indefensible:

1- Every appearance has two aspects: Its essence, which is *will*, and its phenomenal aspect. Now, if we consider transcending the individuality and turning to the pure subject of the cognition regarding human's essence, every individual is identical with the pure subject of cognition by nature. They are the same in essence, which is *will*. Speaking on turning or transcending to the pure subject of cognition (the realm of idea) is meaningless, since we are same as the idea by nature. Regarding its phenomenal aspect, it would be impossible for an individual to become a pure subject of cognition; it presupposes confusion between two realms. A finite entity cannot be non-finite out of his finite aspect. Schopenhauer's criticism against Kant on free *will* could be used against him in this case.²

² Ibid., 247.

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² Ibid., 179.

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² Schopenhauer, *WWR Voll*, 220, 237, 240; Schopenhauer, *WWR Vol2*, 380.

² Schopenhauer, *WWR Vol1*, 345.

² Ibid., 336.

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² According to Kant, human has noumenal free will. That is, he –regarding his noumenal aspect- can act freely in the phenomenal world, which is under the sufficient principle of reason. Schopenhauer, however, disagrees with Kant and believes his argument's justification is an unacceptable "jump into a different domain". (Schopenhauer, *WWR Voll*, 537) In Schopenhauer's view, *will* is free, in itself, but it does not mean that humans, as an expression of *will*, act freely, since we act just out of our phenomenal aspect, which is dominated by the necessity of the sufficient principle of reason. Therefore, the fact that *will* is free by nature has nothing to do with our acts in the phenomenal world. "Regardless of any transcendental freedom (i.e. the independence

2- Schopenhauer argues consciousness and intellect depend on man's body (specifically the brain).² The "condition of possibility" of cognition is embodiment, which presupposes individuality.² Therefore, ascribing cognition to a pure subject that transcends individuality calls for inconsistency in Schopenhauer's philosophy.

3- Defining the idea, Schopenhauer argues it is unchangeable.² However, he claims we, as the pure subject of cognition, approach ideas to recognize them and "letting the whole of consciousness be filled with peaceful contemplation of the natural object that is directly present".³ But it is impossible, since cognition requires modification in the subject.

Conclusion

Given what I have said, rising above individuality and becoming the pure subject of cognition (under any possible meaning in Schopenhauer's philosophy) is unachievable. The object of aesthetic contemplation could be an idea, but the subject should be an embodied individual. The important point is that cognition is approaching an object, i.e., it indicates intentionality. Hence, it is an action identical to other actions by essence. Therefore, like other acts of the human, aesthetic contemplation is the effect of a motive that corresponds to the person's intellectual character. By recognizing ideas, an individual is looking for the same thing another person does by oppressing people. The goal of both is to fulfill pleasure by satisfying their intellectual character (*will*). Aesthetic contemplation is an individual act necessarily prompted by *will* and since "no achieved object of willing gives lasting, unwavering satisfaction"³, aesthetic contemplation is suffering if the goal (cognition) has not fulfilled. And, it will prompt boredom after the goal is obtained.

of the *will* in itself from the laws of connections of its appearance), nobody has the ability to begin a series of actions from himself alone". (Schopenhauer, *WWR Vol1*, 537) The "condition of possibility" of every single act (including moral and cognitive act) is being phenomenal (something which is established in time and place under the principle of sufficient reason), so they cannot be related to something non-phenomenal. That is, for the same reason that "being a free noumenal subject of moral act" is impossible, "being an ideal subject of cognition" is impossible as well.

² Schopenhauer, *WWR Vol1*, 304; Schopenhauer, *WWR Vol2*, 201, 212, 213, 394.

² Schopenhauer, *WWR Vol2*, 325.

² Schopenhauer, *WWR Vol1*, 192.

³ *Ibid.*, 201.

³ *Ibid.*, 219.

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