



On Cultural History Regarding the Intertwining Nature of Philosophy and Science: Boscovich and Nietzsche

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Abstract: The paper discusses the cultural history dealing with the intertwining nature of philosophy and science based on the influence of Boscovich's *Theory of Forces* on Nietzsche's philosophy of *Eternal Return* and the *Will to Power*. Roger Boscovich (1711-1787) was a 18th century polymath who, in his *Theory of Natural Philosophy*[TNP], proposed that the matter consists of non-extended points without mass, serving as centers of force that varies qualitatively (attractive versus repulsive) and quantitatively, proportional to distances. Friedrich Nietzsche was a late 19th century philosopher notorious for his provocative writing, proposing concepts such as *Death of God*, *beyond Good and Evil*, *Will to Power*, *Eternal Return*, *Übermensch* (overman or superman).

The paper addresses the connection between Boscovich, a polymath and a Jesuit priest from 18th century, and Nietzsche, one of the influential philosophers who, a century later, proclaimed: "God is dead. And we killed him". Arthur Schopenhauer was a strong initial influence on Nietzsche's thought, but Nietzsche subsequently moved away, and by adding the influence of physical sciences, including Boscovich, developed his concept of the *Will to Power*. The paper underlines some views across humanistic versus scientific fields, referencing additional relevant physicists and philosophers, and probes into possible integration between science and philosophy.

Keywords: Boscovich, Nietzsche, *Eternal Return*, *Will to Power*, existence, becoming, quantum theory, freedom, entanglement

1. INTRODUCTION

Philosophy and physics, as different branches of scientific exploration, have different methodologies resulting in various impacts on our knowledge and understanding. For example, physicists/scientists look at the phenomena around us and try to explain the phenomena. The ultimate question is: Is it possible to come up with a law that could explain the behavior of all that exists - small things, the universe, hard matter, gases, water. Philosophers try to answer questions about human existence and being.

The paper discusses the cultural history dealing with the intertwining nature of philosophy and science based on the influence of Boscovich's *Theory of Forces* on Nietzsche's philosophy of *Eternal Return* and the *Will to Power*. Roger Boscovich (1711-1787) was a 18th century polymath who, in his *Theory of Natural Philosophy*[TNP]^[1], proposed that the matter consists of non-extended points without mass, serving as centers of force that varies qualitatively (attractive versus repulsive) and quantitatively, proportional to distances. Friedrich Nietzsche was a late 19th century philosopher notorious for his provocative writing, proposing concepts such as *Death of God*, *Beyond Good and Evil*, *Will to Power*, *Eternal Return*, *Übermensch* (overman or superman).^[2]

The paper addresses the connection between Boscovich, a polymath and a Jesuit priest from 18th century, and Nietzsche, one of the influential philosophers who, a century later, proclaimed: *God is dead. And we killed him*. Arthur Schopenhauer, a German philosopher whose main work is *The World as Will and Representation* (1818) proposed the concept of the *Will to Live* guiding human desires and actions.^[3] Schopenhauer was a strong initial influence on Nietzsche's thought, but Nietzsche subsequently moved away, and adding the influence of physical sciences, including Boscovich,

developed his concept of the *Will to Power*. The paper underlines some views across humanistic versus scientific fields, referencing additional relevant physicists and philosophers, and probes into possible integration between science and philosophy.

2. BOSCOVICH

Like some physicists before him, and many after him, Boscovich was determined to find a law that could explain various phenomena. Modifying some results previously developed by Newton and Leibniz, and assuming the law of continuity and the impenetrability of matter, he created his own position. As Copernicus before him, Boscovich assumed that we should not rely on our senses only and that *theoria* can explain practice.

Boscovich was set to find a unifying theory explaining physical phenomena. He states that there are two modes of existence: local and temporal. Any point has a *real* mode of existence given by position (real space) and by instant (real time). The *possibility* of these modes are imaginary space and imaginary time. Hence, Boscovich differentiates between *existence* and *possibility* stating, quote: “*With existing things there is always definite limit, a definite number of points, a definite number of intervals; with possibles, there is none that is finite.*” (In the Supplement to TNP, titled On Space and Time, § 9) Boscovich states that nothing infinite is found *actually existing*, and that the only thing possible that remains is a series of finite things produced indefinitely.

His book TNP is technical, but there is a part that is not so technical, a metaphysical part, an Appendix about the soul, God, and there are supplements on space and time. At the end of the book there is the ‘acceptance’ note. It says that the book is evaluated by the *Censors of the College of Padua*, acknowledging that there is “*nothing contrary to the Holy Catholic Faith*”, and it is registered in the *High Court for the Prevention of Blasphemy*, in 1758. Boscovich was a Jesuit priest, and knowing what happened in 1600 to Giordano Bruno, a Dominican, also a polymath, it is no surprise that the book had to be carefully checked.

3. NIETZSCHE

While physicists try to find a unified theory describing physical phenomena, Nietzsche was one of philosophers trying to articulate a unifying theory describing a human being. Before Nietzsche, Schopenhauer proposed the existence of *Universal Will*, of *Will to Live*, as a unified force applied to a human being, to desires and actions.^[3] Man is incapable to dominate the *Will to Live*, and the only escape of such ‘bondage’ is in art, artistic creation, and experience, especially music. His moral principles were based on pity and asceticism.

Schopenhauer’s influence was strong in the development of Nietzsche’s thought. Schopenhauer’s concept of the *Will to Live* was groundbreaking for young Nietzsche, but he moved further from Schopenhauer’s pessimism and proclaimed the *Will to Power*, adding the insights from physical sciences and, among others, the influence by a physicist/philosopher Roger Boscovich. Nietzsche moved away from Schopenhauer, as he moved away from Wagner.

Nietzsche developed his concept of the *Will to Power*, his doctrine of *Eternal Recurrence*, and the related concept of the *Übermensch* (or the *Overman*), partially inspired by the *Theory of Forces* proposed by Boscovich in his *Theory of Natural Philosophy* from 1758.^[1]

4. FORCE, WILL TO POWER AND ETERNAL RETURN

A human being is characterized by *humanity*, a combination of contradictory feelings and actions. Nietzsche was a poet and a philosopher and in his work *Zarathustra* he said that- quote, “*man is a rope, tied between beast and overman--a rope over an abyss,*” and he adds that man’s greatness is that he is a bridge and not an end.^[4] So, man must be overcome to become the overman, the *Übermensch*. For Nietzsche, as for Boscovich, centers of force exist. Force is regulated by a basic will which Nietzsche calls the *will to power*, which is a creative drive. Since all that exists is finite, and time is infinite, Nietzsche proclaims the doctrine of *Eternal Return*, or eternal recurrence – to eternity.

Nietzsche’s *Eternal Return* is poetically stated in *Zarathustra*, proclaiming love for eternity.^[4] Because you will live this life again and again, you need courage to free yourself from prejudices, to live life to the fullest degree. *Become who you are!* -proclaims Nietzsche.

At first thought, this seems inconsistent: if all returns exactly as it was, whatever I do now is already determined, where is freedom to do anything? Nietzsche would answer that you are here now, existing, and imagine that you will live your life again and again - to eternity. So, make the best out of it! Accept with courage all that will come to you – Nietzsche calls it *amor fati*, love for your fate.

Nietzsche is one of the most misrepresented philosophers. He was against every nationalism, renounced his Prussian citizenship and was stateless until the end. True, because of his hyperbolic style of writing, and his affinity for parody, he can be interpreted in various ways, and is known for his aphorisms. After he fell into madness, his sister edited and rearranged his notes publishing *The Will to Power*, and it is questionable how truthful the book is to Nietzsche thought.

5. ON PHYSICS AND QUANTUM THEORY

In TNP, Article 3 *Of Space and Time*, Boscovich writes that there is a real mode of existence and “*the thing may change this kind of mode, having one mode at one time & another at another time.*”^[1]

This seems to anticipate later developments in physics, such as Bohr’s Complementarity Principle and Heisenberg’s Uncertainty Principle, implying that a ‘thing’ can be measured as a particle or as a wave.^[5]

They proposed the so-called Copenhagen interpretation of quantum theory: Bohr said that a particle has *complementary* properties of position and momentum, and Heisenberg said that there is a limit to simultaneous measurements of position and momentum.^[6]

Interestingly, in development of his theories of electricity and magnetism, Michael Faraday was also influenced by Boscovich’s mathematical points surrounded by alternating fields of attractive and repulsive forces and not as particles of matter.^[7] As Spencer writes,

“The persistence and profundity of Faraday’s commitment to Boscovich, as postulated by Professor Williams, may be indicated by the following passages. “The reasoning here [relative to electrochemical decomposition investigations in 1832 – 1833] should be carefully noted for it reveals clearly Faraday’s continuing use of the hypothesis of point atoms. ... to Faraday the addition and subtraction of the forces represented by Boscovich’s curve was a necessary noncommitment of all chemical action.” (p 245)”^[7]

Interestingly, *Faraday Future* is “an American start-up technology company focused on the development of electric vehicles, founded in 2014.”^[8] *Faraday Future* is to compete with Tesla cars, as stated in “Here’s Why The Faraday Future FF 91 Is Better Than The Tesla Model S”.^[9] It is interesting to mention that in getting the idea of the alternating current, Nikola Tesla also could have been influenced by Boscovich’s alternating forces. He certainly knew about Boscovich, since they both came from the same part of the world, not far away from each other, that is Croatia today. Nicola Tesla is photographed with Roger Boskovich’s book, “*Theoria Philosophiae Naturalis,*” *in front of the spiral coil of his high-frequency transformer at East Houston St. 46, New York.*”^[10]

Going back to Boscovich, in Article 13 of *Space and Time*, he considers a possibility of (quote)

“another infinite space, which is distant from this our infinite space by no interval either finite or infinite, but is so foreign to it, situated, so to speak, elsewhere in such a way that it has no communication with this space of ours; & thus will induce no relation of distance. The same remark can be made with regard to a time situated outside the whole of our eternity.”^[11]

And then he adds that this is so strange and advanced that we should go back to things that concern us.

It is interesting how current physics responds to this with the multiverse theory, or the theory that multiple possible universes exist.^[11] Also, in quantum theory we have a property of *entanglement*, when two points which are very distant from one another are in a strange relation: changing one changes the other, instantaneously, rejecting our notions of space and time, as if they were related some time before and a strange connectivity remained.^[12]

6. NIETZSCHE AND *ETERNAL RETURN*

Nietzsche was not a physicist, his doctrine is a way to proclaim how to live one's life, how to become what one is, as he says, referring the ancient poet Pindar. If everything returns, you will live your life over and over again, to eternity. The moving force is the *will to power*, and accepting your fate with courage, accepting whatever befalls on you with courage, with determination: the phrase "*that what does not kill us makes us stronger*" is Nietzsche's phrase from *Twilight of the Idols*.^[13]

Nietzsche was a passionate writer, and his style has been analyzed in many books. Some will label him the utmost atheist, some will argue on the contrary, and not all his statements should be taken at face value... In fact, Levinas - a philosopher of ethics- said that true religion starts with atheism, that atheism conditions a veritable relationship with a true God.^[14] A philosophical position is interesting if it can have different interpretations, and often the contradictory positions meet at the limit, the *blind spot*, as philosopher Gilles Deleuze would say.^[15]

But let us consider physicists. The arguments in physics are analytical, supported by formulas, hence universally valid. However, sometimes physicists can go too far. Here are two examples. First, in looking at Boscovich's *Theoria*, in many articles of the *Supplement on God* he acknowledges the divine power, of course as a good Christian, and writing under the auspices of the Catholic Church. But, in developing the analytic solution for determining the nature of the *Law of Forces*, in Article 75, he writes, quote:

Hence, the Author of Nature, who decided on this series of phenomena in particular, must have selected certain parameters, & indeed a considerable number of them; nor could He have used a single power of the distance by itself for expressing the law of forces.

So, if the Architect of Nature, *Naturae Auctor*, is God, then God MUST have selected...

Second example: a popular Einstein's quote in reference to the law of uncertainty states: *I, at any rate, am convinced that [God] does not throw dice.*^[16] However, Neils Bohr's response to Einstein was "*Einstein, stop telling God what to do!*"^[17]

But, in 1940, in his paper on *Science, Philosophy and Religion* Einstein said that *Science without religion is lame; religion without science is blind*. This is a paraphrase of Kant's dictum from almost 150 years earlier, in *Critique of Pure Reason*. Kant said that *Thoughts without content are empty, intuitions without concepts are blind.*^[18]

Given those quotes, it seems that science, philosophy, and religion are inherently connected in developments of cultural history and studies. Soren Kierkegaard -a Danish philosopher and theologian, the forerunner of existentialism-writes,

"If you cannot reach the point of seeing the aesthetic, the ethical, the religious as the three great allies, if you do not know how to preserve the unity of the different expressions everything acquires within these different spheres, then life is without meaning and you must be accounted fully justified in your pet theory that one can say of everything: do it or not do it, you will regret both."^[19]

7. CONCLUSION

In *Beyond Good and Evil* Nietzsche said that "*every profound spirit needs a mask.*"^[20] Maybe it is not too surprising that a notorious self-proclaimed antichrist was attracted to a work by a Jesuit priest philosopher/physicist. Both Boscovich and Nietzsche were poets as well, utilizing the liberating power of poetry, of art. Nietzsche said that, for artists, necessity and "freedom of will" are the same thing, because then their feeling of freedom and creativity reaches its climax.

But one can ask: if all is eternally returning, is there freedom? The question can be restated as: what is freedom? Is it the freedom to *act* according to my will? But is my will free, where does my will originate?

This would need to *entangle* some thoughts on the existence of God, atheism, determinism, freedom of the will. *Entanglement* is a notion used by both physicists and philosophers.^[21] Would not this be consistent with the *Complementarity Principle*? Depending on what is discussed, one can talk either

as a physicist or as a philosopher. The difference is in perspective. Maybe we cannot conclude *simultaneously*, but taking together physics and philosophy, maybe we can give a fuller description of our reality and cultural history.

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