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The Influence of Immanuel Kant's Scientific Researches on the Causes of Natural Disasters in the Process of Secularization in the 18th Century

Elena VELESCU[1]*

Abstract

The studies of Immanuel Kant constitute the foundations of the research for earthquakes from a geo-scientific point of view, through his reflections which favour the quantitative relationships of the search for causes. So, the current of secularization in the representation of the natural disaster is established in the eighteenth century by a speech influenced by the physical and natural sciences. Kant endeavours to propose explanations and to find the natural causes of the disaster, which, thanks to his argument, gain strongly in credibility compared with the moral, theological and philosophical formulations. The disaster becomes a peculiarity, which triggers fear, because it cannot be classified and explained. Kant reminds once again the humility, when he affirms that he is "niemals etwas mehr als ein Mensch", the image of the great discrepancy between the technical audacity of man and his technical capacities.Through all his scientific texts that we have analysed, Kant announces the change of paradigm in the apprehension of the natural catastrophe. It will be analysed as a natural phenomenon, and not according to the perspective of a "coup de destin". He exceeds the status of preacher to become a philosopher of Nature, because the reason of the evil does not lie in the order of Nature but in the excesses and the ignorance of the people. In his work, "Der einzig mögliche Beweisgrund zu einer Demonstration des Daseyns Gottes", published seven years later, Kant makes a clear distinction between the natural causes and the moral causes, stemming from the faults of people, which do not cause misfortune as natural disasters.

Keywords: Immanuel Kant; secularization; natural disaster; nature; God.

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1. Introduction

Immanuel Kant (1724-1804), who studied between 1740 and 1746 at the university of his home town Könisberg, the philosophy, the mathematics, the natural sciences and the theology, published in 1756 three papers on the earthquake of Lisbon: «Von den Ursachen der Erderschütterungen bei Gelegenheit des Unglücks, welches die westlichen Länder von Europa gegen das Ende des vorigen Jahres betroffen hat», [„On the Causes of Earthquakes: On the occasion of the Calamity which hit the Western Lands of Europe towards the end of last year"] « Fortgesetzte Betrachtung der seit einiger Zeit wahrgenommen Erschütterungen » [„Continued Observations"and «Geschichte und Naturbeschreibung der merkwürdigsten Vorfälle des Erdbebens von 1755 » ["History and Physiography of the Most Remarkable Cases of the Earthquake which towards the End of the year 1755 Shook a Great Part of the Earth"]., the last one is a monograph published at Johannes Heinrich Hartung [1]. These are papers, which as well the historians of the ideas in 18th century, as the specialists of the Kantian thought didn't pay much attention. Kant's reflections on the representation and the scientific descriptions of this event were however very important for the apprehension of disasters during his time. Alexander von Humboldt confirms in his work "Über den Bau und die Wirkungsart der Vulkane in den verschiedenen Erdstrichenof 1832 the observations of Kant on the internal connection of the abysses of fire of his theory of the shivers. I. Kant is one of the rare scholars of his time to give up the explanations of moral-theological or philosophic order and to reveal new interpretations on *Naturphilosophie*. He becomes one of the first ones who wonder about the "natural" causes of the disaster. His conception about the Nature finds itself especially in three texts, which he published in January and April, 1756 in the newspaper of Könisberg. This proves that the interest of Kant for the nature and the physics did not appear during the earthquake of Lisbon, but that he had thought already before of the questions of the natural sciences. His concerns regarding the subjects connected to the geology and to the geophysics are developed in his entitled work „Allgemeine Naturgeschichte und Theorie des Himmels" ["Universal Natural History and Theory of the Heavens"]. This work is followed by the other texts on a theme relating to " Untersuchung der Frage, ob die Erde in ihrer Umdrehung um die Achse einige Veränderung erlitten habe " [„Whether the Earth Has Undergone an Alteration of its Axial Rotation"] and " Die Frage, ob die Erde veralte, physikalisch erwogen" [„The Question:

'Whether the Earth Grows Old?': considered physically"]. Kant don't let be in these papers a man of science. The analysis of the earthquake in its entirety (earthquake and tidal wave) remained classic and he does not forget his pietistic education.

2. Theoretical Background

The philosopher of Könisberg is influenced in the writing of this work by the naturalist Isaac Newton and the philosopher Leibniz, by the optimistic tone in the representation of the world. The arrival of the earthquake of Lisbon, which shakes the spirits of period, determines Kant to dedicate itself to other studies concerning earthquakes, appeared in 1756:

« Sie werden nicht zu Unrecht als der eigentliche Beginn der wissenschaftlichen Erdbebenforschung angesehen, weil sie sich ausschließlich auf die natürlichen Ursachen beziehen und alle übernatürlichen, religiösen oder mystischen Erklärungen strikt ablehnen »[2].

[They are seen as the real beginning of the scientific earthquake research because they refer exclusively to the natural causes and reject strictly all supernatural, religious or mystic explanations.

At the end of his "Geschichte" ["History"] we find even a chapter dedicated to the utility of the earthquake. Indeed, the presence of sulfur cleanses the atmosphere, hot sources spring, which have a remarkable therapeutic power for the people, the surface of the earth enjoys better a soft internal, beneficial heat for plants and for animals, seen that the sun cannot warm the earth day and night and every day of the year with the same intensity. I. Kant gives another direction to the trial instituted among others, by Voltaire, to the Providence, regarding the atrocities caused by the earthquake. Kant observes that it was better, if on the places subject to earthquakes, the men have built less high, and used lighter materials. It is the man, indeed, who has to conform to the nature, and not the nature to the man. This idea is resumed with strength in the final consideration of the paper of Kant:

« Der Mensch ist nicht geboren, um auf dieser Schaubühne der Eitelkeit ewige Hütten zu erbauen. » ("The man was not born to build on this theater of vanity eternal huts!") [3].

The essay of Kant has origins in the competition organized by the Academy of Berlin, in 1755, exactly the year of the earthquake of Lisbon and the object of the debate of which was: "we ask for the examination of Pope's system, contained in the proposal *Everything is Good*". It is in this debate that Kant intervenes with its paper, which is the product of an academic

discussion, but which will not have a big echo. "Versuch einer Betrachtungen über den Optimismus" [„An Essay on Certain Considerations Concerning Optimism“] is a masterpiece of sophism and abstraction.

3. Argument of the paper

In the first pages of his entitled study “Geschichte und Naturbeschreibung der merkwürdigsten Vorfälle des Erdbebens von 1755” [“History and Physiography of the Most Remarkable Cases of the Earthquake which towards the End of the year 1755 Shook a Great Part of the Earth”], Kant wants to show that the earth is hollow and that its arches are interconnected. The orientation of caves is in parallel in mountains and in big rivers, and according to Kant, it is especially in this direction that the shocks of the earth spread. The vibrations propagate according to the position most high mountains and they form by masses fired in the ground. Then, gases which inflame and extend are going to provoke the shaking of the earth and at the opening of volcanoes, they explode. It is the definition given by Kant to the earthquake and that looks like in the description made by the scientists of time, who still doesn’t make the difference between the characteristics of an earthquake and a volcano. The description of the earthquake of Lisbon, made by Kant and his essay to clarify a natural phenomenon in an empirical paradigm which was already introduced by Francis Bacon, shows the interdisciplinary extensive knowledge, a surprising modernity and a provocative breakage of tradition of the moral-philosophic and theological model of meaning existing during his period.

Concerning the possibility of an earthquake in Prussia, he answers with irony all the clergymen of the morality, as for example, his colleague Gottsched, who presents the earthquake as the result of the Prussian’s sins. Kant asserts that if his job was the one of "die Besserung der Sitten zu predigen"[, to preach the improvement of mores“] , then he « würde die Furcht davor um der allgemeinen Möglichkeit willen, die man freilich hierbei nicht in Abrede stellen kann, in ihrem Werte lassen »[3] [would left value the fear]From the point of view of the philosophy of the morality, the threat of an earthquake could correct and perfect people, but according to a scientific perspective, the possibility that an earthquake could take place in Prussia was very low, because Prussia « nicht allein ein Land ohne Gebirge ist, sondern auch al seine Fortsetzung eines fast durch und durch flachen Landes angesehen werden muß. »[3] [“is not only a land without mountains, but also a very flat landscape”].

4. Arguments to support the thesis

According Kant, the fear does not have to be the main reason to correct people, it will be developed more in detail in his ethics of the duty, when he formulates the categorical imperative: « Handle so, daß du die Menschheit, sowohl in deiner Person als in der Person eines jeden anderen, jederzeit zugleich als Zweck, niemals bloß als Mittel brauchts » [4]. ["Do so, that you would need the humankind, in your person as well in other persons as a purpose, not as a mean"]

In his approach as naturalist, Kant proposes even an experiment of simulation of an earthquake, which allowed observing better the causes:

« Man nimmt 25 Pfund Eisenfeilig, eben so viel Schwefel und vermengt es mit gemeinem Wasser, vergräbt diesen Teig einen oder anderthalb Fuß tief in die Erde und stößt dieselbe darüber fest zusammen. Nach Ablauf einiger Stunden sieht man einen dicken Dampf aufsteigen, die Erde wird erschüttert, und es brechen Flammen aus dem Grunde hervor. Man kann nicht zweifeln, daß die beiden ersteren Materien in dem Innern der Erde häufig angetroffen werden, und das Wasser, das sich durch Spalten und Felsenritzen durchsteigert, kann sie in Gährung bringen. Noch ein anderer Versuch liefert brennbare Dämpfe aus der Mischung kalter Materien, die sich von slebr entzünden." [4] ["One takes 25 pounds iron filings, the same much sulfur and mixes it with common water, buries this a half foot deeply into the earth and pushes the same about this firmly together. After expiry of some hours one sees a thick steam climbing, the earth is shaken and flames break it out from the ground."]

5. Arguments to argue the thesis

Kant qualifies the relation between the nature and the man, and the possibility of coping with or of anticipating, even, the disaster, if the man paid more attention on animals, and if he was in perfect harmony with the nature. With these words, begin his second study „Geschichte und Naturbeschreibung der merkwürdigsten Vorfälle des Erdbebens von 1755", written in Königsberg, in 1756:

„Die Natur hat nicht vergeblich einen Schatz von Seltenheiten überall zur Betrachtung und Bewunderung ausgebreitet. Der Mensch, welchem die Haushaltung des Erdbodens anvertraut ist, besitzt die Fähigkeit, er besitzt auch Lust, sie kennen zu lernen und preist den Schöpfer durch seine Einsichten. Selbst die fürchterlichen Werkzeuge der Heimsuchung des menschlichen Geschlechts, die Erschütterungen der

Länder, die Wut des in seinem Grunde bewegten Meers, die feuerspeienden Berge, fordern den Menschen zur Betrachtung auf und sind nicht weniger von Gott als eine richtige Folge aus beständigen Gesetzen in die Natur gepflanzt, als andre schon gewohnte Ursachen der Ungemächlichkeit, die man nur darum für natürlich hält, weil man mit ihnen mehr bekannt ist. Die Betrachtung solcher schrecklichen Zufälle ist lehrreich" [3]. ["The observation of the nature can teach the humankind regarding the nature laws"]

Kant asserts that these violent events of the nature can inform us on order of the laws of nature and about the necessity of the man to find the harmony with the nature.

Despite of the imperfections of his theories (a part of his scientific conclusions was contradicted by the scholars of today), Kant has the merit to strengthen the bases of the research on an approach where the role of the statistical data and the forecast is very important.

He highlights the attitude of the man who waits that the nature complies with his wills, but it is, on the contrary the man who must know how to adapt himself to the nature; he admits not to be very confident in the fact that the man retained the necessary lessons from all the disasters which he has already undergone: « Es war nötig, daß Erdbeben bisweilen auf dem Erdboden geschähen, aber es war nicht notwendig, daß wir prächtige Wohnplätze darüber erbauen? Die Einwohner in Peru wohnen in Häusern, die nurin geringer Höhe gemauert sind, und das übrige besteht aus Rohr. Der Mensch muß sich in die Natur schicken lernen; aber er will, daß sie sich in ihn schicken soll. » [3] ["It wasn't necessarily that people build their houses in regions with earthquakes or they could have built smaller ones. The humans must learn from nature, but they want that the nature learn from them."]

In the final part, Kant expresses his opinion on the justice and God's wisdom and on the principle of divine vengeance. He tries to vary the position of the philosophy on natural disasters. Fiirst of all, he makes to understand, how a misfortune must be observed: « Man verstößt aber gar sehr dawider, wenn man dergleichen Schicksale jederzeit als verhängte Strafgerichte ansieht, die die verheerte Städte um ihrer Übeltaten willen betreffen, und wenn wir diese Unglückselige als das Ziel der Rache Gottes betrachten, über die seine Gerechtigkeit alle ihre Zornschale ausgiesset. Diese Art des Urteils ist ein sträflicher Vorwitz, der sich anmaßet, die Absichten der göttlichen Ratschlüsse einzusehen und nach seinen Einsichten auszulegen. » [3] ["The people see the violence of nature events as the punition of God"].

However, the man doesn't content himself with being a part of the creation, but he always tries to have it more and to dominate it: " Wir sind ein Teil derselben und wollen das Ganze sein." [3] ["We are a part of the whole but we want to be the whole"].

The nature does not envisage, by itself the disaster, it is not dangerous or revenging, it is the system which is over the knowledge of the man:

«So ist der Mensch im Dunkeln, wenn er die Absichten erraten will, die Gott in der Regierung der Welt vor Augen hat. » [3] ["The man is in the darkness when he's trying to guess that God intend to rules."]

Kant tries hard to propose explanations and to find the natural causes of the disaster, which, thanks to his argumentation win strongly in credibility compared with the formulations of moral-theological and philosophic order. The disaster becomes a peculiarity, which activates the fear, because we cannot classify it and explain it. Kant reminds again to the humility, when he asserts that he is "niemals etwas mehr als ein Mensch". ["never more as a man"] Wolfgang Breidert sees in it a memory of the "big gap between the technical audacity of the man and his technical capacities" [5].

6. Dismantling the arguments against

By all these texts, Kant announces the change of paradigm in the apprehension of the natural disaster. This one will be analyzed as a natural phenomenon, and either according to the perspective of a "blow of fate". He exceeds the clergyman's status, to become a philosopher of the Nature, because the reason of the Evil does not lie in the order of the Nature, but in the immoderation and the ignorance of the people. In his work published seven years later and entitled „Der einzig mögliche Beweisgrund zu einer demonstration of Daseyns Gottes", Kant makes a clear distinction between the natural causes and the moral causes, stemming from faults of the men, which do not cause misfortunes, as natural disasters: « Es sind viel Kräfte in der Natur, die das Vermögen habe, einzelne Menschen, oder Staaten, oder das ganze menschliche Geschlecht zu verderben. Erdbeben, Sturmwinde, Meeresbewegungen, Kometen etc. Es ist auch nach einem allgemeinen Gesetzen genugsam in der Verfassung der Natur gegründet, daß einiges von diesen bisweilen geschieht. Allein unter den Gesetzen, wornach es geschieht, sind die Laster und die moralische Verderben keine natürliche Gründe, die damit in Verbindung stünden. [...] Und wenn sich aber ein solcher Fall ereignet, man mißt ihn aber einem natürlichen Gesetze bei, so will man damit sagen, daß es ein Unglück, nicht aber, daß eine Strafe sei, indem das moralische Verhalten der Menschen kein Grund der Erdbeben nach einem

natürlichen Gesetze sein kann, weil hier keine Verknüpfung von Ursachen und Wirkungen statt findet. » [6] ["These are a lot of forces in the nature which can damage the whole human gender: earthquake, storm, sea movements, comets etc. But only the vices and themoral corruption not their natural causes. When such a case occurs, it's from a natural law, an accident, but not that a punishment for the moral behavior of the people"]But, when the devastating strengths of the nature are understood as a divine punishment, its causes do not depend on natural laws, but on the wisdom of God, on the divine law:

« Soll es [das Erdbeben] dagegen als eine Strafe betrachtet werden, so müssen diese Kräfte der Natur, da sie nach einem natürlichen Gesetze den Zusammenhang mit der Führung der Menschen nicht haben können, auf jeden solchen einzelnen Fall, durch das höchste Wesen besonders gerichtet sein; als denn aber ist die Begebenheit im formalen Verstande übernatürlich, obgleich die Mittelursache eine Kraft der Natur war. » [6] ["and if the earthquake might be seen as a punishment, it has to be seen as the power of nature, which are in connection with the natural laws"]

7. Conclusions

The studies of Emmanuel Kant establish the foundations of the research for the earthquakes of a point of view geoscientist, by his reflections which favor the quantitative reports of the research for the causes. So, the current of secularization in the representation of the natural disaster is established in the XVIIIth century by a speech influenced by the physical and natural sciences.

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