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The Lisbon earthquake and the scientific turn in Kant's philosophy

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In contrast to other previous and later disasters the Lisbon earthquake was more than a local disaster that changed the life of the Portuguese population and later became subject to the merciless oblivion of history. This cataclysm left lasting traces in European science, social life, religion and philosophy. The material effects were rapidly felt all over Europe, also affecting the economy and the whole conception of how humans should think and act in a world where such events occurred. This paper follows the change in Immanuel Kant's philosophy after the earthquake based on the thesis that this event contributed fundamentally to the formation of Kant's mature philosophy and its paradigmatic status in European thought until the present day.

Order and purpose

The Lisbon earthquake was a major disaster on a global scale with a massive impact on the entire cultural life of Europe. As a natural event it was seen as a unique phenomenon, unprecedented and unrepeatable; as a cultural fact it gained, like previous spectacular events, a widespread effect through the manifold consecutive writings and actions it produced. In addition, the world view of the young Immanuel Kant, and his philosophical thinking, were fundamentally altered when the news of the Lisbon disaster reached him in Königsberg, a city close to the Baltic Sea and surrounded by moors and semi-humid areas. Kant was profoundly concerned with nature, not in any direct or empirical way, but as a purely philosophical and theoretical enterprise which, in these days, was considered an integral part of natural science.

Kant's early writings focused on the basic vital and dynamical forces of nature, *Gedanken von der wahren Schätzung der lebendingen Kräften* from Spring 1747[1] and on the general cosmology that offered a totalizing interpretation of the manifold processes and phenomena of nature, *Allgemeine Naturgeschichte und*

Theorie des Himmels from March 1755.[2] In a short paper, *Die Frage, ob die Welt veralte* from August and September 1754, he also addressed the question of the aging of the world – does the world undergo essential change, or was it a finished creation from the beginning?[3] These were all hot topics on the scientific agenda of the day. Researchers and thinkers tried to find a balance between, on the one hand, the empirical insights in the real processes of nature gradually dismantling the image of nature as a static creation by God some thousands of years ago and, on the other, the necessity of still placing God – with absolute knowledge, goodness and power – in the centre of this same nature.

One of the most important solutions to this philosophical and theological dilemma was defined by Gottfried Wilhelm Leibniz in 1710 in his *Essais de Théodicée* introducing the theory of the best of all possible worlds.[4] Among the most ardent followers of Leibniz was Alexander Pope in his *Essay on Man* from 1733,[5] (cf Ref. 6). The young Kant, too, basically subscribed to this programme and used a series of quotes from Pope as epigraphs to all the chapters in the most ambitious of his early works, *Allgemeine Naturgeschichte und Theorie des Himmels*. Here he tries to evaluate the most important theories of nature of his day in order to form a unifying interpretation in the footsteps of the theodicy.

In his treatise from 1747 on the vital forces of nature, Kant tries hard to reconcile the mechanical world view of Descartes with the dynamic and teleological principles of Leibniz. He admits that there is a mechanical coherence in the world that can be turned into mathematical formula based on certain quantifiable constants, but also that such a system as a whole must have been created by one purposive mastermind. Kant's main preoccupation is to argue that the sum total force in the universe is not constant in a mathematical sense, because vital forces exist that can acquire an absolute freedom of movement, also in the limited time frame of earthly existence and thus expand the amount of forces in the world.

From this point of view, Kant arrives at the conclusion that a successive and expanding making of life is possible. The world is a developing world. Thus he comes close to an organic world view, which later flourished in Romanticism (Ref. 1, §124, Ref. 2). The world is not yet finished, but is a work in progress toward perfection. It is aging, not in the sense of decaying, but in the sense of maturing[3] following, according to Kant, the principle of continuity that informs Leibniz' theodicy (Ref. 1, §163): nature does not allow for leaps, holes or any other discontinuity.

Preparing for the earthquake

In Spring 1755, the *Berliner Akademie* received competing treatises submitted as responses to a prize subject announced about a year earlier: an analysis of Pope's axiom that everything that is, is good (with the only slightly disguised intention

of confirming it – Ref. 7, p. 372, and Ref. 8, p. 68). Kant did not answer, but in March 1755 he published his great cosmology *Allgemeine Naturgeschichte und Theorie des Himmels*, which in a sense *is* an answer. Here he does not focus on specific aspects of nature, like its vital forces and its aging, but on nature in its entirety. Therefore, his reference to the overall purposiveness of nature emanating from God as the highest reason is much more pronounced than in the previous texts. Only 'the most stupid' can deny this reference, Kant tersely remarks in a denigrating tone (Ref. 2, p. 345). Nevertheless, he admits that, given the fact that nature has not yet reached its most perfect state, we may come across phenomena that superficially and, in passing, may look like loops and anomalies, but they do not belong to the essential vital forces of nature. Lucretius' theory of haphazardly colliding atoms does not stand a chance in the larger picture (Ref. 2, p. 334).

Deeply engrained in this way of thinking, Kant's natural philosophy takes on a purely speculative form. With logical shrewdness he scrutinizes the most advanced thinking of his day, at times reminiscent of a scholastic question-and-answer strategy without any reference to empirical investigation. Not that Kant denies the effects of causality. In the brief paper on the aging of the world, published in August and September 1754, he lists four such causes for the aging process: the saltiness of the oceans, the rain and rivers, the withdrawal of the sea from land, and – finally – a unifying material and all-pervasive principle for the processes of nature. Kant opts for the last possibility, underscoring that he envisions a material dynamical principle, not a spiritual force. But he also admits that he has not explained the aging of the world, but only presented an irrefutable argument for the developmental thesis and a guideline for further investigations.

In the very final lines of his paper Kant therefore suggests that new causes may be found to understand the process further. The causes may even be such forces that 'through a sudden cataclysm of the Earth they may produce its destruction' (Ref. 3, p. 213). But – he adds immediately – such fatal events have nothing to do with the aging process itself, just as the destruction of a building by an earthquake has nothing to do with its growing old. If discontinuity is not permitted permanently *in* the world, discontinuity from outside may nevertheless be involved at the apocalyptic end. The Lisbon cataclysm is still one year ahead, but Kant's grappling with the limits of what can be grasped by the human mind on the grounds of the theodicy makes him sensitive to what is coming.

Thus, Kant has, so to speak, worked himself up to receive a major blow by the news from Lisbon at the end of 1755. Of course, he was not the only one. But he was one of the most important ones because he, in spite of the distance across the continent, was so troubled that he changed his focus of thinking from speculation to experience. And this change paved the way for the single most influential philosophical contribution to the modernization of Europe in science, philosophy, religion, politics, ethics, aesthetics and social sciences. In his later

work, he tried to reconcile the restrictions of human capacities for action and recognition, imposed on us by our bodily senses and mental equipment, with the notion of infinity previously located in God. To Kant, this notion was no longer primarily rooted in a divine power, but, as we shall see, in the development of human freedom. His immediate reaction to the disaster consists of two small articles and a longer deliberation over facts and findings concerning the earthquake of Lisbon, all three from the beginning of 1756.[9]

The scientific turn

At this point we may talk about the scientific or the empirical turn in Kant (Ref. 6, p. 341ff). In the three texts, all references to divine teleology have vanished; instead Kant is trying his best to stay with material, causal explanations. Moreover, the quiet confidence in providence has been replaced by a concern with materially founded prognostic procedures in order to avoid future catastrophes and an ethical obligation to try to come up with measures to prevent their effects. Furthermore, the speculative methods and sarcastic rebuffs of the logical deficiencies in the arguments of other scholars have disappeared in favour of meticulous reports on empirical details of the widespread effects of the disaster across the continent together with cautious suggestions of causal explanations. Finally, out of the shadows behind the notion of harmonious nature allowing for human freedom as a continuous natural development in the best of all possible worlds he sketches the first modest attempts to understand human freedom as conditioned by the confrontation with an enigmatic and threatening nature. In short: not only is Kant's philosophical conception of nature and God in the process of change, but so is his way of writing, his value system and his focus of interest.

The point of departure is the irrefutable, overwhelming and surprising empirical details in Kant's surroundings. He not only lists the small bubbles in the hot springs of Töplitz in Bohemia (present day Teplice in the Czech Republic), but also registers all the reliable reports he can come across about the surprising movements of waters in the Baltic and Scandinavian ports as well as in the moors and humid territories in the European inland. Kant was not alone noticing these and other reported material effects: The material effects were felt and much talked about across the continent[10–12] (in fact, the earthquake was accepted as the 'strongest in the world', as an anonymous German visitor reported (Ref. 12, p. 652; cf. Ref. 13, p. 15). The news spread with considerable velocity (Ref. 12, p. 649; Ref. 11, p. 225). The *Gazeta de Lisboa* is of course first, on 5 November. Berlin is informed on 11 November in the *Berlinische Nachrichten*, Paris on 22 November in the *Gazette de France*, and London on 26 November in the *London Magazine*. Hamburg receives the news via Vienna with the French

mail of 29 November, and in Copenhagen the readers of the *Kjøbenhavns ridende Post* can enjoy the shocking reports about Lisbon on 5 December (Ref. 14, p. 179). Long before the reports in these journals appeared, private letters, secret intergovernmental reports, and internal commercial correspondence in the companies with properties and goods in Lisbon, had spread the news in closed circles (on discursive strategies, see Ref. 15).

Kant's idea is that the explanation of the occurrence of the small bubbles may prove instrumental to explain also the big waves in Portugal, and thereby not only to understand the natural processes causing the eruption, but also to be able to foresee future events and prevent some of the damages and casualties. The preoccupation with empirical facts is therefore necessarily accompanied by a critical survey of contemporary causal explanations, but now deprived of any sarcasm regarding their incompleteness as in his *Allgemeine Naturgeschichte und Theorie des Himmels* published just eight months earlier. The occasion is too mind-blowing and incomprehensible.

The outcome is that Kant recontextualizes both his explanatory framework and his teleological orientation. His earlier theories of the vital and dynamical forces of nature, hitherto framed by a divine metaphysics, now become part of a causal explanation. Water and other liquid substances under high pressure act like a hard body and cannot be stretched out and 'relax' as a surface. Therefore, the pressure is kept at a high pitch enabling it also to disturb inland waters. Thus, seismologically true or not from a modern perspective, Kant tries to unite otherwise disconnected phenomena, waves near Lisbon and bubbles near Königsberg, by a causal link.

What happened then to the teleological perspective? In the context of the theodicy, the unquestioned assumption is that infinity, order and purposiveness are united in God and that, consequently, all essential knowledge, criteria for truth and the ethical perspective of human life can be derived from this unity. The corollary that follows from this assumption is that knowledge, truth claims and ethics that go against this assumption are, per definition, untenable. That is also the argumentative logic in Kant's early works. But it also follows that if one part of the assumption is denied, the whole assumption falls apart. That is what Kant learns from the earthquake. The teleological part did not hold and other components of the entire assumption had to be reconsidered. He uses the rest of his life to come to terms with this situation in his philosophy.

In contrast to many advanced contemporary thinkers who abandoned divine final causes and did not give much thought to ethics or infinity, Kant did not give up the basic problems altogether in favour of the structure of material processes alone. What he developed in his entire later philosophy is a radical reflection on all three dimensions in their own right, requiring for each of them a new theoretical foundation: knowledge as based on an explicit theory of recognition; truth rests

on explicitly stated theoretical criteria; ethics regards inter-human relations and our relation to our natural foundation. The main point is not whether he was right or wrong in the details, but that he made it crystal clear that these matters are defined by humans, that they must rest on arguments we can understand and exchange on human conditions, and that they therefore can be changed in and by the history of mankind.

New perspectives

In his 1756 treaties on the earthquake, and particularly in the final paragraphs of the third treaty, Kant briefly advances the then still vaguely formulated idea that it is not their prescribed position in the purposively ordered totality that makes human beings aware of man's true nature, and of his place in the universe (Ref. 9, p. 135). On the contrary, it is the basically enigmatic character of nature in relation to God's intentions, and to the laws of nature and nature's processes, that constitutes the condition of possibility – a precious notion in Kant – for the human being to be really human. Only face to face with the enormity and incomprehensibility of nature, humans may acquire their true freedom in accepting the responsibility for whatever order there may be outlined in our life. It is exactly the absence, and not the presence of the divine *telos* in nature, that makes it possible for another type of *telos* to emerge just as fundamental as any divine *telos*. Hence, the possibility of human freedom *is* for Kant the very *telos* of human life, given by and revealed by nature in its unpredictable enormity, inscribing infinity in mankind itself both as a possibility and as the never ending responsibility for the unfolding of this potentiality, and therefore also the driving force for the development of a new ethics based on human duty (Kant could never subscribe to an utilitarian ethics based on the idea of the greatest happiness for the greatest number).

Thus, in the early days of 1756, Kant opens the door to his future philosophy of nature and human experience to the three critiques that changed the mental map of Europe – *Kritik der reinen Vernunft* (1781), *Kritik der praktischen Vernunft* (1788) and *Kritik der Urteilskraft* (1790), the last one including his aesthetic theory on the sublime ('das Erhabene'). In the foreword to *Kritik der reinen Vernunft* he uses the metaphor 'Copernican turn' to characterize the pathbreaking nature of the new direction of philosophy he is undertaking. That this metaphor, often quoted in Kant criticism, came to his mind is not surprising. The reason is not only the universal range of his philosophy Kant lays claim to, as is often taken for granted, but it has also to do with the focus on astronomy, cosmology and geology in Kant's pre-earthquake writings. They contain the way of thinking he wants to overcome, but also resound in his most important book with a metaphorical echo precisely in order to mark this distance.

The key notion of his aesthetics, the sublime, is also derived from this conception of human freedom. By being confronted with nature on a trans-human scale both in terms of size and force, as in the case of an earthquake, but still being able to see ourselves as humans, human beings define themselves as free, even when it comes to nature, and thereby they themselves are absolutely responsible for individual and social life, internally and in relation to nature.[16] Aesthetics and ethics are twins in Kant's universe, also without divine blessing.

What we today call the *risk society* is born in Kant's writings after the Lisbon earthquake and partly as a consequence of it. Thus, the massive, provocative, scaring, overwhelmingly powerful materiality of the earthquake is an essential moment, if not *the* essential moment, in the transformation of European thought that made it finally modern. It is strange, therefore, to observe that Kant in his later writings never mentions the earthquake with one word, not even when later, in *Über das Misslingen aller philosophischen Versuche in der Theodizee* from 1791, he mercilessly refuted the plausibility of any theodicy,[17] nor in his lectures on geology in the years just before his death in 1804. In fact, after 1756, Kant only rarely refers to earthquakes, and when he does comment upon them, he does so without exclusive or decisive bearing on the argument. Did he repress the memory, as too traumatic to remember? Or had it simply served its purpose: to reorient his philosophy, which then followed its own course opening his eyes to new dimensions of human freedom and responsibility beyond the particularity and singularity of the earthquake?

With Lisbon as a subtext, as it were, Kant expressed this experience in 1786 in his *Muttmasslicher Anfang der Menschengeschichte*:

> A presentation of the history of mankind must recommend to Man in order to serve him as a lesson and an improvement: that he must not blame providence in any way for the troubles that harm him; that also his own destruction cannot be ascribed to an original sin committed by his primitive parents; […] but that he recognizes every single event as if it in all respects were produced by himself, and that he therefore must accept himself the full responsibility for his own hardships, also those occasioned by abuse of reason.(Ref. 16, p. 101)

Kant's point is that although we are not responsible for the natural processes themselves, we are nevertheless responsible for these processes when they are turned into a larger event the moment humans are involved. As for example an earthquake, we may add. We are not responsible for nature as such but for our practical and intellectual relation to it.

The Lisbon earthquake merged with the early modernization in Europe defining human hope and freedom first of all as an unavoidable and troublesome responsibility for our shared future. This challenge has been with us ever since, particular in the sciences, and we have never stopped thinking, acting, writing and

dreaming on this condition, *la condition humaine*. In this sense Lisbon made our world human and modern.[18]

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