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Tetsugaku

International Journal of the
Philosophical Association of Japan

Special Theme

Philosophy of Catastrophe

Volume 6, 2022

ISSN 2432-8995

ISSN 2432-8995

Tetsugaku

International Journal of the Philosophical Association of Japan

Volume 6

2022

Special Theme

Philosophy of Catastrophe

The Philosophical Association of Japan

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Tetsugaku
International Journal of the Philosophical Association of Japan
Volume 6, Special Theme: Philosophy of Catastrophe
October 2022

Edited and published by the Philosophical Association of Japan
Department of Philosophy
School of Humanities and Social Sciences
Waseda University
1-24-1 Toyama, Shinjuku-ku, Tokyo, 162-8644, Japan

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ISSN 2432-8995

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Tetsugaku
International Journal of
the Philosophical Association of Japan
Volume 6, 2022

I Special Theme: Philosophy of Catastrophe

Catastrophe as a philosophical issue
Preface to Special Issue on "Philosophy of Catastrophe" of *Tetsugaku*

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What would the world look like for a person born at the turn of the century? "The End of History", as it was proclaimed by Francis Fukuyama to commemorate the close of the cold war, did not bring the world's peaceful reconciliation with itself but opened a period of constant disaster of every variety, be it natural, industrial, technological, political, economic, ecological, and so on: from the September 11th attacks, the 2003 outbreak of SARS (COV-1) in Asia, the global spread of H5N1 avian influenza in 2004, the Sumatra-Andaman earthquake and tsunami in 2005, the 2008 bankruptcy of Lehman Brothers, the huge earthquakes and tsunamis in Haiti in 2010 and in the northern-eastern part of Japan in 2011, the latter of which triggered the nuclear accident at the Fukushima Daiichi Nuclear Power Station, a recurrence of the refugee crisis in the 2010s, the pandemic of COVID-19, which has still yet to come to an end, to the intimidating effects of the climate change visible regularly everywhere in the world. The concurrence of all these events seems to indicate that catastrophe is an ongoing process and not a disastrous upheaval. At the very least, "Catastrophe" is no longer an object of speculative concern, one concerning the apocalyptic end of the world, but has come to be evinced in the events that we witness in our ordinary lives and on a worldwide scale. The frequent release of movies thematizing all sorts of disasters, catastrophes, and apocalyptic ends of the world expresses our common concern, as well as some need for catharsis in the face of these menaces.

Needless to say, what we call disaster or catastrophe has been studied as a scientific or academic concern. While interest in these themes existed previously—especially in social sciences[1]— it is from the 2000s that the question of catastrophe has gained broader attention and from the varied perspectives of history, sociology,

[1] See for example E. Quarantelli, *Disasters. Theories and researches*, 1978; M. Douglas and A. Wildavsky, *Risk and Culture*. University of California Press, 1983; M. Douglas, *Risk and Blame. Essays in Cultural Theory*, Routledge, 1992; E. Quarantelli (ed.), *What is a Disaster? Perspectives on the questions*, Routledge, 1998. In these cases, attention is paid more to the notion of disaster or risk than to that of catastrophe (in the sense of doom).

anthropology, geology and cultural theory.[2] This has been true for philosophy as well.[3] By following important works on this topic, it is possible to recapitulate the discussions around this topic, as well as to reconsider what kind of philosophical reflections are possible on these matters and how we can, if not warn or prevent, at least understand what is called 'catastrophe'. For even if catastrophe is said to be an event that occurs beyond any predictive understanding, our way of understanding has been shaped by the knowledge and judgments accumulated during our experiences of various catastrophic events. In this introductive essay, we would like to trace some important arguments on this topic.

In ancient times, concerns about catastrophes lay in a religious order. Apocalyptic anxieties were shared by most religions, including Judaism, Zoroastrianism, Christianity, and Islam, in the form of millennialism, eschatology, or revolutionary movements both political and intellectual.[4] In the middle age,[5] in

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[2] Though not exhaustive, we can cite several interesting works: F Walter, *Catastrophes. Une histoire culturelle XVI^e^-XXI^e^ siècle*, Seuil, 2008; N Bostrom and Milan M. Cirkovic, *Global Catastrophic Risk*, Oxford University Press, 2008; L. Buchet et al. (dir.), *Vers une anthropologie des catastrophes*, Éditions APDCA/INED, 2009 ; M.-H. Huet, *The Culture of Disaster*, The University of Chicago Press, 2012; Ph. Bornet et al. (dir.), *La fin du monde. Analyses plurielles d'un motifs religieux, scientifique et culturel*, Labor et Fides, 2012 ; J.-B. Fressoz, *L'Apocalypse joyeuse*. *Une histoire du risque technologique*, Seuil, 2012. A, Dauphiné et D. Provitolo, *Risques et catastrophes. Observer, spatialiser, comprendre, gérer*, Armand Colin, 2013. Y. Moreau, *Vivre avec les catastrophes*, PUF, 2017. E. Horn, *Future as Catastrophe. Imaging Disaster in the Modern Age*, Columbia University Press, 2018; C. Meiner, K. Veel (eds.), *The Cultural Life of Catastrophes and Crises*, Walter de Gruyter, 2012; C. Coquio, J.-P. Engélibert, R. Guidée, *L'apocalypse : une imagination politique (XIV^e^-XXI^e^ siècles),* Presses Universitaires de Rennes, 2018 ; N. Ferguson, *Doom. The Politics of Catastrophe*, Penguin Press, 2021.

[3] In particular, philosophical concern about catastrophe is vivid in France. Besides the works on Jean-Pierre Dupuy that we will mention later, see F. Neyrat*, Biopolitique des catastrophes*, Éditions MF, 2008; I. Stengers*, Au temps des catastrophes. Résister à la barbarie qui vient*, La découverte, 2009; P. Zaoui, *La traversée des catastrophes. Philosophie pour le meilleur et pour le pire*, Seuil, 2010; R. Debray, *Du bon usage des catastrophes*, Gallimard, 2011; M. Foessel, *Après la fin du monde. Critique de la raison apocalyptique*, Seuil, 2012; J.-L. Nancy, *L'équivalence des catastrophes (après Fukushima),* Galilée, 2012.

[4] Cf. A. Amanat & M. T. Bernhardsson, *Imaging the end. Visions of apocalypse from the Ancient Middle East to Modern America*, I. B. Tauris, 2002; E. Aubin-Boltanski et C. Gauthier, *Penser la fin du monde*, CNRS, 2014.

[5] R. K. Emmerson and B. McGinn, *The Apocalypse in the Middle Ages*, Cornell University, 1992; J.-P. Leguay, *Les catastrophes au Moyen-Âge*, Gisserot, 2005; T. Labbé, *Les catastrophes naturelles au moyen âge*, CNRS, 2017.

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particular, in Europe, natural disasters like deluges, thunderbolts, or even the appearance of a comet were generally understood as signs of divine punishment.

It was certainly the Lisbon earthquake in 1755 that provoked, for the first time, philosophical discussion about catastrophe, while we can find around it political, religious, scientific, and even mediatic meanings as well.[6] The "Poem on the Lisbon Disaster",[7] which Voltaire composed within weeks after the event, contested the Leibnizian (or Popian) idea of optimism that seems to justify, from the point of view of Providence, any lamentable sorrow imposed on innocent people. This claim prompted not only a satirical novel *Candide*, in which the author again ridicules metaphysical or religious comprehension of disasters, but also triggered a series of philosophical reflections on what is catastrophe.

The first important reaction came from Jean-Jacques Rousseau, soon after the publication of Voltaire's poem. He asks Voltaire to consider the fact "that nature did not construct twenty thousand houses of six to seven stories there, and that if the inhabitants of this great city had been more equally spread out and more lightly lodged, the damage would have been much less, and perhaps of no account".[8] With this consideration, he made a decisive modification of the conception of the catastrophe. This thought does not simply turn the attribution of causes away from Nature or the will of God; any disaster that seems to belong to the realm of nature cannot be understood as such without taking into account the human interventions that contribute to its consequences: it is not only nature but also human society that makes a disaster catastrophic.

The Lisbon earthquake also drew the attention of the young Kant, who published a trio of natural-philosophical essays on the earthquake in order to understand in a scientific manner the mechanism of such a disastrous event.[9] We can

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[6] On 2005, the 250th anniversary of the Lisbon earthquake, importants works were published to explain its multiple aspects. Cf. *Lumières*, no. 6, « Lisbonne 1755 : un tremblement de terre et de ciel », 2005; T. E. D. Braun and J. B. Radner, *The Lisbon earthquake of 1755. Representations and reactions*, SVEC, vol. 2, 2005 ; J.-P. Poirier, *Le tremblement de terre de Lisbonne*, Odile Jacob, 2005 ; G. Quenet, *Les tremblements de terre aux XVII^e et XVIII^e siècles. La naissance d'un risque*, Seyssel, Champ Vallon, 2005.

[7] Voltaire, « Poème sur le désastre de Lisbonne », in *Œuvres complètes*, t. 45A, Oxford Foundation, 1968.

[8] Rousseau to Voltaire, « Lettre à Voltaire sur la Providence », 18 August 1756, in *Correspondance complète*, Leigh (éd.), vol. 4, 1967.

[9] "Von den Ursachen der Erderschütterungen bei Gelegenheit des Unglücks", "Geschichte und Naturbeschreibung der merkwürdigsten Vorfälle des Erdbebens", "Immanuel Kants

add that the Lisbon earthquake also helped him develop his idea of the sublime, the experience that indicates the limit of human capacities.

In any case, what it crucial to these debates on the catastrophe was that, from then on, the question started to be posed in a different manner. It is no longer a matter of knowing whether catastrophe is part of the inevitable course of Nature or Providence, but whether it can be understood within the limits of human comprehension. The metaphysical questions around contingency and necessity, causality and prediction, and so on, were to be reconsidered in this perspective; the contributions of Pascal or Leibniz to the theory of probability, as well as to the development of the idea of statistics, prepared a way for the modern attempt to "tame" chances and accidents.[10] According to Judith Shklar, the Lisbon earthquake constituted thus one of the "birthdays" of the modern age.[11]

At the beginning of the modern age, Kant spoke again of the "End of all Things", but the question was no longer about religious or metaphysical speculation on an apocalyptic end but the possibility of moral progress for humans as finite existence.[12] Political or industrial revolutions and developments in science and technology appeared to give a prophetic vision of building a safer and happier society. Although there existed a rare author who was able to foresee "the end of the world by science" and technology,[13] we might say that disastrous accidents were not considered to be catastrophic upheavals but as moments to be dialectically incorporated into a process of progress that heads toward further development.

We may point out that, nevertheless, there appeared a new face of disaster, namely as something that, while having its origins in the course of human activities, generates effects largely exceeding the human reach and that becomes an unpredictable and uncontrollable phenomenon. The appearance of industrial disasters has thus required not only the implementation of political and legal measures capable of managing them but also a theoretical transformation of notions such as responsibility or risk,[14] which lead to the further development of assurance theory and risk governance system for the sake of the "Golden Age of Security" (Stefan

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fortgesetzte Betrachtung der seit einiger Zeit wahrgenommenen Erderschütterungen", in *Gesammelte Schriften*, vol. 1, G. Reimer, 1910.

[10] Cf. I. Hacking, *The Taming of Chance*, Cambridge University Press, 1990.

[11] J. Shklar, *The Faces of Injustice*, Yale UP, New Haven/London, 1990.

[12] Kant, « Das Ende aller Dinge », 1794 (AA XXIII)

[13] Cf. E. Huzar, *La fin du monde par la science* [1855], Éditions ERE, 2008.

[14] Cf. F. Ewald, *L'État providence*, Grasset, 1986.

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Zweig).

However, the project of Enlightenment, initiated in the 18th century and promoted by those who believed in progress, was far from reaching the goal that they had planned. As Adorno and Horkheimer pointed out,[15] it turned out that its project could not prevent a catastrophic outcome.

The Nazi's attempt to exterminate the Jewish people, an attempt symbolized under the name of "Auschwitz",[16] was to be experienced as apocalyptic, especially by those who were targeted: French philosopher Emmanuel Levinas started his phenomenological analysis by referring to "the situation of an end of the world" in his book written in 1947, just after being liberated from a camp of prisoners during WWII.[17]

It was the German-Jewish thinkers who were forced to flee from their home country, those like Theodor Adorno and Hannah Arendt, that contributed most to the comprehension of Auschwitz as a catastrophe. The expression repeatedly used by Adorno, "after Auschwitz", was of great relevance, since it introduced to a comprehension of catastrophe an insight concerning temporality, precisely, an interrupting moment that cut off a linear progression of time. This insight was shared by Arendt; even though she entitled her book *The Origins of Totalitarianism*, what she intended was not to grasp chronologically the "origins" that would have originated a phenomenon called "totalitarianism", but to bring to light the elements that would help understand the reason why this unprecedented event could have occurred.[18]

While to a relatively smaller degree, "Hiroshima" and "Nagasaki" have nevertheless attracted the attention of a certain number of philosophers.[19] Besides, for example, Bertrand Russell's engagement against nuclear weapons that might be classified as more political than philosophical, we can consult an important reflection on Hiroshima by Georges Bataille written in 1947, "Concerning the Accounts Given

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[15] T. Adorno and M. Horkheimer, *Dialectic of Enlightenment*, transl. by Edmund Jephcott, Stanford University Press, 2002

[16] Among innumerable books written on this subject, see the works of Emil Fackenheim and in particulier O. Ombrosi, *The Twilight of Reason: Benjamin, Adorno, Horkheimer and Levinas Tested by the Catastrophe*, Academic Studies Press, 2011.

[17] E. Levinas, *Existence and Existents*, transl. by Alphonso Lingis, Kluwer Academic, 1978, p. 21.

[18] Cf. H. Arendt, "Reply to Eric Voegelin", in *Essays in Understanding*, Harcourt Brace & Company, 1994, p. 408.

[19] For an overview of philosophical reflections on Hiroshima, see E. Demenchonok (ed.), *Philosophy After Hiroshima*, Cambridge Scholars Publishing, 2010.

by the Residents of Hiroshima",[20] or Karl Jaspers's monumental book published in Germany in 1958, *The Atom Bomb and the Future of Man*.[21]

"Hiroshima" was not overlooked in Anglo-American philosophy. The British philosopher Elisabeth Anscombe protested Oxford's decision to confer an honorary doctorate on Harry Truman. By admitting that "choosing to kill the innocent as a means to your ends is always murder",[22] she has challenged the utilitarian way of justifying the massive extermination. This issue of how or whether we can justify the decision to use weapons of mass destruction continues to be discussed from the perspective of ethics and political philosophy, including its leading philosophers like Michael Walzer and John Rawls.[23]

Nevertheless, the question does not consist in simply knowing whether the utilitarian approach can be justified in the case of this event of massive destruction and its catastrophic outcome. Here again, we should question whether such a catastrophic event is still an outcome of the decisions truly made by humans. In this regard, we cannot underestimate the importance of the insight of a German-born philosopher, Günther Anders. He has published in 1956 his theoretical reflection on the transformation of human existence, *The Outdatedness of Human Beings*, where he put forward the notion of "Apocalyptic Blindness" to explain how the complexity of advanced technology has made possible the situation in which men become unable to imagine the consequences of what they had created; between the human capacity of imagination and that of fabrication, there is a gap difficult to bridge, which he calls a "Promethean gap".[24] This insight was concretized by his visit to Hiroshima and Nagasaki in 1958[25] and by his correspondence with the Hiroshima pilot Claude Eatherly.[26] In these essays, he pointed out that in the case of the use of the atomic bomb, even if it belongs to a human activity toward another human being, the feeling

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[20] Translated by A. Keenan in C. Caruth (ed.), *Trauma: Explorations in Memory*, John Hopkins University Press, 1995.
[21] K. Jaspers, *The Atom Bomb and the Future of Man*, University of Chicago Press, 1963.
[22] E. Anscombe, "Mr. Truman's Degree", in *The Collected Papers of G.E.M. Anscombe*, vol. 3, Blackwell, 1981.
[23] M. Walzer, *Just and Unjust Wars*, Basic Books, 1977; J. Rawls, "Fifty Years after Hiroshima", in *Dissent*, Summer 1995.
[24] G. Anders, *Die Antiquiertheit des Menschen*, Bd. 1: *Über Die Seele Im Zeitalter der Zweiten Industriellen Revolution*, C. H. Beck, 1956.
[25] G. Anders, *Der Mann auf der Brücke: Tagebuch aus Hiroshima und Nagasaki*, C.H. Beck, 1959; reprinted in *Hiroshima ist überall*, C. H. Beck, 1982.
[26] C. Eathely and G. Anders, *Burning Conscience: The Case of the Hiroshima Pilot Claude Eatherly*, Verdun Press, 2015.

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of responsibility or guilt is felt less and less by the actor, while the victims have less and less a sense of revenge. Although the catastrophic event itself had its origin in human conduct, it comes to appear as if it fell from the sky like a natural phenomenon. Günther Anders has thus traced the transformation of catastrophe in the age of technology, which had already made technologically possible the end of the world by human means. Catastrophe, which once seemed to have fallen to the human realm from the divine at the moment of the Lisbon earthquake, has now risen to the realm of "system"; being re-naturalized so to speak, it has gone up out of the range of human capacities.

This kind of systemic approach was shared by several philosophical reflections on the development of technology after WWII. Best known is the analysis of Heidegger on what he calls "*Gestell*" to describe the essence of the increased technologization of the modern world: all beings are understood as materials and are forced to be exploited as a part of the system.[27] In this regard, we might refer to a series of critiques of modern technology by post-Heideggerian philosophers, including Hannah Arendt or Günther Anders, of course, but also other thinkers. An American historian, sociologist, and philosopher of technology, Lewis Mumford refers to the "megamachine", which the spread of science and technology creates in order for social organization to be ordered as a device of mediation articulated according to its aim,[28] whereas a French philosopher Jacques Ellul describes a similar structure by the term "technological system".[29]

These types of criticism of technology should not be considered as simple technophobia or as an appeal to a return to some pastoral experience uncontaminated by technology. According to Heidegger's famous interview with *Der Spiegel* in 1966, the most "awful" thing about modern technology lies not in a breakdown of a system due to a malfunction but in the fact that "Everything is functioning". All the configurations that aim toward keeping the system running well contain within them the possibility of bringing about a disastrous effect in a broader way. This remark does not remain purely theoretical. It will help us understand how catastrophe has changed its face through technological development. In fact, it is possible to say that this remark echoes what the sociologist Charles Perrow has called "normal accidents" just after the nuclear accident of Three Mile Island. The accidents in the technological era

[27] Cf. M. Heidegger, *The Question Concerning Technology and Other Essays*, Harper, 1977.
[28] L. Mumford, *The Myth of the Machine. Technics and Human Development*, vol. 2, Harcourt Brace Jovanovich, 1970.
[29] J. Ellul, *The Technological System*, Wipf and Stock, 2018.

should not be understood in the sense of some unpredictable and astonishing turning event but in the sense that they are intrinsic to the vastly connected structure of our ordinal life in its dependence on high-risk technologies.[30]

In the latter half of the 20th century, population growth and the increasing pollution of the environment caused by the economic activities of advanced countries raised concerns about the catastrophic consequences brought by modern civilization. The famous reports of the Club of Rome can be considered as a new kind of prophecy of doom. These concerns have indeed provoked academic interests, especially in the field of social science.

The first approach was made by so-called disaster studies. Since the 1950s and 1960s, scholars in sociology and anthropology have sharpened the notion of disaster, by distinguishing it from other related terms, such as emergence and catastrophe, by pointing out similarities and differences between technological and natural disasters, or by taking into account ecological problems to redefine disaster in the context of global change.[31]

The other approach lies in a theorization of the notion of risk in a variety of research frameworks. This notion had been the object of theoretical reflections (in particular in economics and sociology), with an aim to give it a more precise definition, by distinguishing it from an uncertainty (Frank H. Knight) or from a danger (Niklas Luhmann). But what is most important for the understanding of the problem of risk in the actual context is what German sociologist Ulrich Beck theorized with his notion of "Risk Society". According to Beck, risk should not be understood in its narrow sense, as a probability of damage that will have a negative effect. It has changed its nature in the modern world and should be considered as "a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself".[32] The risk society can thus bring about disastrous or catastrophic effects in a large-scale, unpredictably, unavoidably, artificially, globally, and, what is more, in a "reflexive" way, that is to say, as the consequences of modernization itself.

Despite these efforts to develop conceptual frameworks, disasters themselves have continued to become so bloated and so complex that it has turned out that the

[30] C. Perrow, *Normal Accidents. Living With High-Risk Technologies*, Basic Books, New York, 1984.
[31] See especially E. Quarantelli (ed.), *What is a Disaster?: Perspectives on the Question*, Routledge, 1998.
[32] U. Beck, *Risk Society: Towards a New Modernity*, transl. by Mark Ritter, Sage Publications. 1992.

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prevision or prevention based on scientific evaluation of risk is not sure enough to deal with them. The Rio Declaration on Environment and Development in 1992 thus had to recognize the Precautionary Principle, by maintaining that, in order to facilitate environmental decision-making, if there is a suspected risk of causing harm to the environment, the lack of full scientific certainty should not be used as a reason not to take preventative measures to prevent environmental degradation.

On the other side, the risk-based approach is contested in another context. Although this approach presupposes that the undesirable outcome should and can be prevented, this framework seems insufficient to deal with the increasing complexity of catastrophic events. The French review *Esprit* published a special issue on "Catastrophes" in 2008, which begins with a significant manifesto written by the "Groupe 2040". 2040 signifies "a decisive turning point in many areas", which will bring about, if not an apocalyptic end of the world, at least a vast transformation of almost all atmosphere due to depletion of fossil resources, global warming, etc.[33] To take this possibility seriously into account, the group proposes a transformation of the character of catastrophe itself: "Our time seems to be not only that of "the" Catastrophe but of various catastrophes, be it climatic, economic or politic, social or medical". It is a convergence of various catastrophes that makes difficult any effort to predict and prevent their consequence, and that at the same time requires a task to think differently.

The works of French philosopher Jean-Pierre Dupuy, who took the lead in this manifesto, are highly important to understand this task. While he worked initially in the field of economics and political theory, and even cognitive science, he started to give a series of philosophical reflections on catastrophe in the 2000s. With his main works, *How to Think about Catastrophe: Toward a Theory of Enlightened Doom Saying*,[34] published first in French in 2002, and *A Short treatise on the Metaphysics of Tsunamis* (2005), he proposes a "theory of enlightened doom saying", which consists mainly of the conviction that what might seem impossible, in short, a catastrophic outcome, can be considered nevertheless as absolutely certain, based on the state of actual knowledge. This theory should be distinguished from religious types of doom saying as well as from certain tendencies of alarmism that insist on the unavoidable collapse of industrial civilization (especially "collapsology" proposed by

[33] Groupe 2040, "Penser les catastrophes", *Esprit*, no. 3, 2008.
[34] Michigan University Press, 2022.

French intellectuals).[35] Moreover, he criticizes the risk-based approach, which in his eyes does not consider seriously the occurrence of a catastrophe because of its theoretical framework of the cost-benefit calculation; he proposes for his part a "phenomenology of time" which consists in defining a fixed point in the future, that is to say, holding for certain the occurrence of a catastrophe so that we can reconsider in a backcasting manner our thought and action from this point of view.

For us, the Japanese, the 2011 Tohoku earthquake and tsunami and the nuclear accident at the Fukushima Daiichi Nuclear Power Station that followed were an experience of a catastrophe, in the sense that, according to the expression of Dupuy, what seemed impossible became certain. But it was not simply an upheaval that changed all reality; it was also an experience of the "normality" or even "banality" of catastrophe. The remark of Dupuy is again persuasive: "The terrible thing about a catastrophe is that not only does one not believe it will occur even though one has every reason to know it will occur, but once it has occurred it seems to be part of the normal order of things. Its very reality renders it banal".[36]

According to another French philosopher Jean-Luc Nancy, what Fukushima has revealed is a situation that existed already "before Fukushima" and that revealed its hidden character, which used to be considered "normal"; namely, the global situation of a complex entanglement of interdependencies and interaction between multiple actors (political, industrial, financial, scientific, technological, natural, etc.). If then the specificity of Fukushima lies in this kind of interconnection of natural cause and artificial or technological structures, we can no longer make a distinction between natural, industrial and other kinds of catastrophes. Jean-Luc Nancy thus designated this situation under the title of "equivalence of catastrophes",[37] for which sociologists seem to prefer the term "structural disaster"[38].

The chronology of catastrophes nowadays does not stop at this point. Covid-19 made us see once again a scene of quasi-apocalyptic end all over the world. This time too, the catastrophe showed another aspect. Whereas the catastrophes of the past had a proper name to indicate where they happened, such as "Auschwitz", "Hiroshima", or "Fukushima", COVID-19 brought forth a new situation where there

[35] On the collapsology, see P. Servigne et R. Stevens, *Comment tout peut s'effondre. Petit manuel de collapsologie à l'usage des générations présentes*, Seuil, 2015.
[36] J.-P. Dupuy, "The precautionary principle and enlightened doomsaying", in *Revue de métaphysique et de morale*, no. 76, 2012.
[37] J.-L. Nancy, *After Fukushima: The Equivalence of Catastrophes*, Fordham University Press, 2015.
[38] M. Matsumoto, *The Sociology of Structural Disaster: Beyond Fukushima*, Routledge, 2021.

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might be no need to specify a location and a time, as if catastrophe would occur anywhere and anytime. Philosophers did not remain indifferent to this pandemic. The Italian philosopher Giorgio Agamben criticized a new type of disposition of government that arises from a combination of the state power that attempts to normalize the temporary measures limited to the state of emergency, and what he calls "bio-security", which gives privilege to the value of life.[39] As for Jean-Pierre Dupuy, by admitting that this time the catastrophe is no more an event to come but the situation in which we are actually confined, he questions a variety of logics of COVID sceptics and evaluates them from a philosophical point of view.[40]

Perhaps, we may admit that this expression of normalization of the state of emergency would summarize the stakes of the catastrophe to which we are confronted now, and that this problem lies above all at the center of the problem of climate change. A lot of arguments are posed about the catastrophic aspect of its effects, such as global warming, resource scarcity, and so on, from the perspective of ethics,[41] as well as from that of ecology.[42] We would like to limit ourselves to suggest some points that concern our problem of the catastrophe. These points are linked to a debate on Anthropocene.

We can recall that Nobel prize scientist Paul Crutzen, an advocate of the notion of Anthropocene, constantly warned of all sorts of catastrophic outcomes made by the development of technology and industry, such as the destruction of the ozone layer, Nuclear winter, and now climate change due to greenhouse gases. The notion of Anthropocene that Crutzen popularized had so great an impact on a variety of thinkers and actors that it provoked certain types of responses to deal with this ecological catastrophe. The first response is adaptation; namely the process of adjustments in ecological, social, or economic systems in response to climate change, by reducing vulnerability and building resilience. This will eventually affect human capacity, which might find certain echoes in the arguments of post-humanists. The second is

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[39] G. Agamben, *Where Are We Now?: The Epidemic As Politics*, Rowman & Littlefield Pub Inc, 2021.

[40] J.-P. Dupuy, *La Catastrophe ou la vie - Pensées par temps de pandémie*, Seuil, 2021.

[41] Cf. S. Gardiner, *A Perfect Moral Storm: The Ethical Tragedy of Climate Change*, Oxford University Press, 2011; H.-S. Afeissa, *La fin du monde et de l'humanité. Essai de généalogie du discours écologique*, PUF, 2014; L. Hartzell-Nicholas, *A Climate of Risk: Precautionary Principles, Catastrophes, and Climate Change*, Routledge, 2017.

[42] Cf. F. Guattari, *Les trois écologies*, Galilée, 1989 ; C. Larrère et R. Larrère, *Du bon usage de la nature : Pour une philosophie de l'environnement*, Aubier, 1997 ; I. Stengers, *Au temps des catastrophes. Résister à la barbarie qui vient*, La découverte, 2009; H.-S. Afeissa et al. *Ecosophies. La philosophie à l'épreuve de l'écologie,* Editions MF, 2009.

degrowth, which criticizes the capitalist way of life and in particular the growth-centered economical system, identified as a cause of global warming, in order to seek a sustainable society.[43] But the third one is the most important for our topic. Not being satisfied with these two claims, judged as not enough or not effective, some scientists dare to rely on a certain kind of "catastrophism", namely on technical or engineering intervention that might save the planet from its collapse at the expense of degradation of certain atmospheric conditions.[44] If we can no longer overlook the risk of the extinction of the whole human race, we might have no choice other than this possibility of making a "catastrophe" by ourselves, neither an adaptation to a devastated world nor an appeal to a new habitable world being unrealizable. We might add that the possibility of the extinction of humankind has already constituted the theme of philosophical examinations.[45]

Based on these recognitions, this special issue seeks to bring forward new understandings and new approaches to catastrophe. How can we evaluate the concept of catastrophe and other notions related, such as disaster, accident, and risk from our experiences of the past and of the present? What can we learn from philosophers on these topics? What is the role of human beings in the age of catastrophes? What kind of philosophical reflections is to be made on a concrete catastrophic event?

Masaki Ichinose is a specialist of British empiricism and has published many books on the notions of causation, probability, and personality. After 3.11, he has been involved in a debate over how philosophy can deal with situations after catastrophes and published *Hōshanō mondai ni tachimukau tetugaku* [Philosophy confronted with the problem of radiactivity] (2013) and *Inochi to risuku no tetsugaku: Byōsaigai no sekai o shinayaka ni ikinuku tame ni* [Philosophy of life and risk: resiliently surviving the world of disease and disaster] (2021). In his article, he begins by examining the concepts of risk, precaution, and causation in order to propose, based on the evaluation of the measures taken at the case of the Fukushima Daiichi Nuclear Power Station Accident, a sophisticated and applicable version of the precautionary principle.

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[43] See especially the works of S. Latouche, among other thinkers in the domain of "écologie politique" in France.

[44] See S. Asayama, "Catastrophism toward 'opening up' or 'closing down'? Going beyond the apocalyptic future and geoengineering", *Current Sociology*, vol. 63 (1), 2015.

[45] See for example R. Brassier, *Nihil Unbound : Enlightenment and Extinction*, Palgrave Macmillan, 2007; J. Leslie, "The Risk that Humans Will Soon Be Extinct", *Philosophy*, vol. 85, no. 334, 2010.

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Nicolas Prignot is a physicist and philosopher. Through the influence of the works of the Belgian philosopher of science Isabelle Stengers, he is now interested in the work of philosopher Félix Guattari and the philosophy of nature in associative environmental movements. His article shows how the Fukushima catastrophe can be understood in the perspective of the eco-philosophy of Guattari.

The works and interests of Orietta Ombrosi are well demonstrated by her first important work (originally written in French), *The Twilight of Reason: Benjamin, Adorno, Horkheimer and Levinas Tested by the Catastrophe*. As the title indicates, she has been working on these Jewish-born philosophers who had the experience of catastrophe during WWII. She is also interested in philosophical debates on the nuclear and edited *Nuclear Power: A Scientific and Philosophical Issue from 1945 to Today* (Mimesis, 2020). Her article examines how two German-born Jewish philosophers, Adorno and Anders, considered the two emblematic catastrophes of the 20th century, Auschwitz and Hiroshima.

Finally, Jean-Pierre Dupuy, cited frequently above, gives a concluding remark; he gives firstly a metaphysical framework of doomsaying and then evaluates, from this point of view, the Nuclear Deterrence Theory.

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Risk, Precaution, and Causation

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1. The notion of risk

We are always exposed to harm, for it is utterly impossible to enjoy perfect safety. During the pandemic, we received vaccines, knowing that we might suffer from side effects. Still, we did so because we could expect inoculation from the virus. Besides the pandemic, when, say, we are walking on the street, we are exposed to the danger of being hit by a car or falling victim to some random act of violence. Even when we are quietly reading a book in the library, there is still the possibility of a massive earthquake, and especially so in some countries like Japan. Considerations of this kind must make us realize that we are living, strictly speaking, in a dangerous world, one where we do not know, in any exact sense, what will happen next.

Many philosophers discuss this point by highlighting the fatal difficulty of making perfectly accurate predictions about the future. The problem lies in the intrinsic difference between the past and the future. For example, David Hume once clearly described this difference in the context of his arguments about our causal inferences based upon past experience.

> These two propositions are far from being the same, *I have found that such an object has always been attended with such an effect*, and *I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects*. (Hume 1999, p.114)

Hume's insight strikes one as truly honest and philosophically precise. The past and the future, undoubtedly, are so ontologically heterogeneous that, strictly speaking, past events could never play the role of guaranteeing predictions of future events. The future is intrinsically uncertain, philosophically speaking.

Nevertheless, in our ordinary lives, we care little for such purely metaphysical heterogeny. Of course, this attitude should be judged as groundless from a

philosophical point of view. While it is true that this attitude has enabled successful human life in the past, theoretically speaking, we could say its success is simply accidental. Such an assessment might not be so extravagant, given that the history of human science is extremely short compared to the history of the universe. Our data must be understood, from this perspective, to be intrinsically limited. I am not certain of how we could explain our ordinary, optimistic attitude toward extrapolation (which exceeds our authority) despite its obvious, theoretical limitations. I can only surmise that one could explain it from an evolutionary point of view. In that sense, Hume's strategy of appealing to the function of our imagination or to belief seems to become reasonable.

Yet, even apart from the discussions of the philosophers, we human beings have not completely forgot our uncertainty about the future. Noteworthy is that such uncertainty in our daily lives does not lead directly to terror. How, then, do we face this uncertainty in a way compatible with such feelings to the contrary (i.e., feeling not too scared of the uncertainty)? We find recourse out of the sharp dichotomy between 'certainty' and 'uncertainty' in probability, or the statistical way of thinking, which offers a way of assessing uncertainty in numerical degrees. Indeed, this idea was crucial, enabling us to spend our lives as safely and comfortably as possible and to distinguish among uncertainties those things highly likely from those things unlikely, at least as far as our experience and feeling ('belief' in a Humean terminology) are concerned. That is to say, through probability and statistical thinking, we human beings, to a certain extent and not perfectly, have achieved a reasonable way of surviving this uncertain world.

Furthermore, where uncertainty seriously matters is where we might be somehow harmed. Thus, we have established how to make decisions about our actions or our social strategies, considering both numerical values of probabilities and severity of harm. That is to say, the notion of risk was invented.

According to Niklas Möller, the notion of risk has been variously understood, but recently defined as follows:

> Risk = the statistical *expectation value* of unwanted events which may or may not occur. (Möller 2012, p.58)

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> The notion of expected value as such dates from the early development of probability theory in the seventeenth and eighteenth centuries, its application in the risk context is fairly new. It became common after the influential Rasmussen Report of 1975 and is now the standard definition of "risk" in risk analysis. The expectation value is the probability-weighted sum of the severity of harm. It measures the *magnitude* of the risk as the combination of two factors, the probability of an unwanted event, and its severity. It supplies an overtly *quantitative* sense of risk that is used both to compare risks, and to give a single magnitude of risk. (Möller 2012, p.59)

Risk, then, is notated as follows (where *e* stands for a particular relevant event):

$$\text{Risk}\,(e) = \text{probability}\,(e) \times \text{severity of harm}\,(e)$$

We can thereby make (practical, political, medical, etc.) decisions by taking into account the risks presented by each option considered. It is true that, exactly speaking, notions of probability and severity face some theoretical difficulties in precisely giving numerical values, but there is no denying that the notion of risk has supplied a quite useful tool to assist our decision-making.

2. Cost benefit analysis and decision making

Undoubtedly, risk seriously matters in our society. In both public and personal matters, risks are considered whenever we make decisions that could bring about some harm. Traffic systems serve as typical examples in which risks seriously matter. (Vaccination, in the medical context, could too.) For example, about 3,000 people are killed every year by car accidents in Japan. There are many possible causes: insufficient education on traffic safety, bad driving etiquette, traditional crossroad intersections, a shortage of street mirrors, the usual construction of brakes and accelerators, and so on. It is not so difficult to collect statistical data with regard to the correlations between those possible causes and the death rates of car accidents by applying, for instance, randomized controlled trials, and calculate each element's probability of resulting in

accidents if we adopt the frequency interpretation of probability. In this sense, as far as car accidents are concerned, we could quite easily come up with some effective measures to decrease the death rates. Those measures might include automatic emergency braking, which has recently been partially implemented.

In the case of car accidents, we find a situation where we can clearly identify a specific harm (i.e., death)[1] and assess the probability of the harm occurring. Thus, we could prevent this harm by considering assessments of the costs and probabilities involved in each measure. I have just taken the example of car accidents, but other problems, such as those related to crime rates, natural disasters, or environmental problems, could be treated in the same way, so long as we could make assessments of the related probabilities and costs. In any case, this line of arguments basically presupposes a kind of scientific or statistical investigation of past data.

When we make decisions in accordance with this line of argument, the costs of a given measure must be taken into account as crucial factors. As the traditional slogan goes: 'ought implies can'. In a financial sense, policies that are prohibitively expensive simply cannot be carried out. We have no Mallet of Fortune. Moreover, the notion of "cost" must be interpreted in a broader way that includes issues of human health as well as financial issues. It is utterly unjustifiable to achieve safety at the cost of the health of particular people. Thus, while it is true that we could solve the problem of car accidents by legally abolishing the use of cars altogether, under such a policy, some who need cars in urgent cases, like sudden illness, would have to be sacrificed, to say nothing of the many other conceivable negative side-effects such a policy would entail. For such reasons, it is morally unjustifiable to completely abolish the use of cars in our present societies.

Naturally, these arguments can be connected with what is called "cost-benefit analysis" (CBA) in economics and decision theory. According to Lewens, cost-benefit analysis is expressed as Risk Cost-Benefit Analysis (RCBA) and defined as "a method

[1] There is, of course, some controversy as to whether death is harmful or not. As is well known, Epicurus once argued that death is neither harmful nor beneficial by pointing out that, by definition, we would have no consciousness when we die, and so we would feel neither harm nor benefits in death. Indeed, this Epicurean idea may be at work in discussions on the problem of euthanasia, since its supporters seem to accept that we will escape from harm by dying. On this deeply metaphysical debate, Fischer (1993) and Warren (2004), for example, are worth studying.

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which uses money as a common currency for measuring the value of consequences of very different kinds. RCBA does this by asking how much people would be willing to pay to have (or to avoid) those consequences. If I would be willing to pay £10 for a slightly better cycle helmet, but £1000,000 to own a Monet, this suggests that in some sense I value owning a Monet far more than I value a small increase in safety on my bike" (Lewens 2007, p.5). This idea seems to be similar to, for example, a classical idea, of which Frank Ramsey once proposed a refinement, on how to give numerical value of subjective probability (or degree of belief) in terms of thought experiments of betting (See Ramsey 1990, chap. 4).

3. Preventive principle

Social or political decisions based on notions of risk, cost, and benefit are often made in a way compatible with what is called the "Preventive Principle" (PVP), particularly in cases where some serious harm would probably happen unless some measures against that harm were implemented. Generally speaking, the Preventive Principle (also called the Prevention Principle) is understood to be clearly proposed in the Stockholm Declaration that was made in 1972.

The Stockholm Declaration (SD), which includes 7 proclaims and 26 principles, begins with this sentence[2]:

> The United Nations Conference on the Human Environment, having met at Stockholm from 5 to 16 June 1972, having considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment. (Sohn 1973, p.434)

SD, then, clearly focuses on problems concerning the environment, which we are, of course, still discussing, now in terms of 'global warming'. In this sense, SD could be understood as an early stage of what would lead to the present SDGs, particularly goal 13 on "climate action".

What I notice in particular in SD is principle 18, which says:

[2] I refer to SD by relying on L. B. Sohn's detailed commentary paper on SD.

> Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind. (Sohn 1973, p.434)

As this remark shows, SD seriously considers science, technology, and the notion of risk. That is to say, SD claims that we should progress science and technology to cope with environmental problems while taking into account the risks of both climate changes and our possible measures against them. This strategy is declared again in principle 20:

> Scientific research and development in the context of environmental problems, both national and multinational, must be promoted in all countries, especially the developing countries. In this connection, the free flow of up-to-date scientific information and transfer of experience must be supported and assisted, to facilitate the solution of environmental problems. (Sohn 1973, p.483)

According to Leslie-Anne Duvic-Paoli, who published the book on PVP,

> Despite the non-binding character of the Declaration, the text jumpstarted the development of international environmental law. The Stockholm Conference immediately acted for the creation of a new international legal order based on the preventive principle. (Duvic-Paoli 2018, p.46)[3]

At first glance, it might seem to be true that PVP works only in a negative way, preventing some human measures or strategies from being adopted in order to preserve natural environments, but such an impression is to be corrected. The notion of prevention in PVP is supposed to be primarily applied to the prevention of harmful

[3] The close relation between the notion of "prevention" and SD is confirmed in an expansion of principle 18 of SD proposed by Brazil, Egypt, and Yugoslavia, which says: "Science and technology, as part of their contribution to economic and social organization and development process, can and should be so directed as to contribute to the prevention and solution, or at least reduction, of environmental problems, including in respect of natural resources exploitation and the physical planning of human settlements" (Sohn 1973, pp.479–480).

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climate change. Namely, what is prevented is the deterioration of environment rather than the application of science or technology. Of course, PVP implies that our measures towards protecting environments should be prevented if they were harmful in themselves and warns us that some technological advances and their applications should be stopped if their outcomes are scientifically ascertained to be harmful to the environment. Still, the prime function of PVP, at least in the initial context, was to prevent serious environmental problems by actively implementing measures that are based on scientific study, even if those measures involve some risk. Duvic-Paoli clarifies this point:

> The anticipatory rationale of prevention dictates a proactive approach to risk. States are not merely expected to exercise restraint vis-à-vis environmental harm but also to take positive steps to protect the environment. (Duvic-Paoli 2018, p.199)

That being said, PVP is not completely clear. Particularly, when PVP is applied to problems whose risk is difficult to accurately calculate, as in the case of the long-term effects of climate change (cases about which nobody knows precisely what will happen), PVP does not seem to work effectively. Duvic-Paoli points out that,

> The interpretation of preventive obligations through an inter-generational lens will be restricted by the fact that science has difficulties assessing the long-term impacts of a potentially harmful activity, especially if the assessment requires taking into account cumulative effects. (Duvic-Paoli 2018, p.293)

To put it another way, problems that demand decisions are divided into at least two types: those treated in terms of probability (i.e., risk) and those treated in terms of ignorance (i.e., uncertainty). If that is the case, and if we must make decisions on problems of the second type, then perhaps PVP alone is insufficient for guiding our decisions.

4. Risk and uncertainty

As a matter of fact, making a distinction between risk and uncertainty is a standard strategy with regard to the issue of decision making. This strategy originates from Frank Knight's argument (see Fischhoff & Kadvany 2011, p.10) and seems to work as a basic framework for discussing the problem of decision making.[4] So long as we investigate decision problems with this distinction, and so long as PVP depends entirely on the notion of risk (which intrinsically includes a calculation of probability), we have to introduce another principle to cope with problems whose probability is not measurable.

However, what kinds of problems should be precisely classified as belonging to the category of uncertainty? How about climate change? As I have suggested, it seems that the long-term effects of climate change, how, that is, the climate on the earth will be ten thousand years from now, cannot be predicted. But what about climate change two hundred years from now? It is quite reasonable to say that many kinds of academic or scientific studies propose some sorts of predictions about how the climate will be in a few hundred years and do so in a somewhat reliable way. For this reason, PVP was declared in SD with regard to the problem of climate change.

To be honest, I must confess that I personally cannot see what the decision problem amounts to in the case of pure uncertainty, cases where it is utterly impossible to assign probability. I have two kinds of questions about this issue. First, insofar as we consider the wide applications of probability, including both subjective and frequency theory, it is hard to imagine a case of pure uncertainty that would matter in a way that triggers decision problems. For instance, Michael Resnik offers one simple example of the uncertainty case. His example is the case of a student of physics who wonders whether she is able to successfully become a good physicist. He classifies this case as one of uncertainty, a case where probability cannot be measured. It is absolutely true that there is a kind of uncertainty belonging to this case, but simply speaking, even in this case, her own subjective probability (i.e., degree of belief) makes definite sense, and an assessment of frequency, based upon data concerning her

[4] For example, Resnik introduces the problem of choice by making a basic distinction of two phases, namely, "decision under ignorance" and "decision under risk: probability" (Resnik 1987). Resnik contrasts certainty with uncertainty, and includes both ignorance and risk into uncertainty, whereas Knight intends by "uncertainty," as differentiated from "risk," a situation whose probability could not be calculated (which is what Resnik calls "ignorance").

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abilities, her supervisor's assessment of her work, and so on, is not absolutely impossible. As a matter of fact, university professors usually make assessments of their students' prospects in a sort of (subjective-) probabilistic way, basing such assessment on their students' works. In fact, every time their students progress in their studies and achieve new outcomes, professors' probabilistic assessments could be updated in a Bayesian way.

Second, even if we grant that there are cases of pure uncertainty, I still wonder how we should react to such cases. While it strikes me as extremely difficult to give an example of such a case, I will venture an example. What would happen to the human race if we made a law that ordered all people to take more than 6 hours of sleep at least once a year? Who could predict precisely what would happen in the first fifty years of such a law? What kind of harms should concern us? I think this gets us quite close to a case of pure uncertainty. Yet, there may be the possibility, however slight or merely theoretical, that someone perceives this law as a restriction to their lifestyle. Should we genuinely consider this possibility and contrive some measures to prevent it from being realized? I am not sure. But I would point out that, in this context, it is hardly plausible to talk about how to cope with cases of pure uncertainty such as this. Strictly speaking, the uncertainty case is, by definition, a case whose outcomes we cannot predict. Any outcome is fair game. If so, it seems that we have neither the ability nor need to consider such cases.

Nevertheless, I have to frankly admit that there is a notable difference with regard to preventability between the harms incurred through traffic accidents and the long-term harms of climate change, as far as our social policies are concerned. Obviously, the long-term harms of climate change are more uncertain than those of traffic accidents, in the sense that it is more difficult to specify those risks in terms of both probability and severity. Therefore, it seems that we still need another decision principle besides the preventive principle.

5. Precautionary principle

It seems to me that it is in this line of thought that the "precautionary principle" (PCP) was proposed. It is possible to have anxiety toward the potential, albeit unconfirmed,

harms of a particular technology or policy. Suppose, for example, that we decide to prohibit the use of mechanical typewriters from 2030 onwards, with an exception permitting their use in the movie industry as period props. Preparing to implement this policy, we might not come across any serious problem. Nevertheless, it is not completely unreasonable to imagine that someone might fear that this prohibition will have terrible consequences for the human race. This sounds similar to the case of pure uncertainty, where the notion of risk cannot function, since the severity and probability of a not unimaginable harm is intrinsically unknown.

PCP is considered to have been initially offered or exemplified in the following remark within the 1992 Rio Declaration (RD),[5] Principle 15.

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

This principle sounds fairly moderate and highly convincing with respect to our practices in ordinary life. We generally try to practice care in avoiding predictable harm, by, say, locking the door when we leave our houses, wearing seatbelts while driving, buying life insurance, and so on. Such behaviors seem to be cases to which PCP could apply. Yet, we have to stop to ponder this carefully. These cases, strictly speaking, belong to the purview of PVP and not PCP, as it is perfectly possible in principle to assess probabilities of harm in terms of some statistical inquiry. That is, they are not cases of uncertainty.

The crucial point of PCP is that "lack of full scientific certainty" should not be used as a reason not to implement measures against harms like environment degradation. That is to say, only "threats of harm" could work as a reason for precautionary actions. It seems to me that the most naïve reaction or question to this idea of PCP is how to interpret "threats of harm." Who should judge whether "threats of harm" are really posed? On what grounds could such judgments be made despite a

5 https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf

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"lack of full scientific certainty"? Would such judgments be in danger of being reduced to the subjective assessments of particular people? How, for example, should we apply PCP to deal with the above-mentioned case of prohibiting mechanical typewriters? If some felt that such a prohibition evinced a threat of harm, should we implement some precautionary measures based on PCP?

Such suspicion might be further fueled if we consider the following passages from the Wingspread Declaration (WSD) issued in 1998,[6] which is usually regarded as stating a strong version of PCP.

> We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment - the larger system of which humans are but a part. We believe there is compelling evidence that damage to humans and the worldwide environment is of such magnitude and seriousness that new principles for conducting human activities are necessary. While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors.

Evidently, WSD focuses on cases where risk assessment fails, in contrast to cases in which PVP can be applied, and continues by offering a strong version of PCP for such cases, formulated as follows:

> Therefore, it is necessary to implement the Precautionary Principle: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

WSD is clearly much stronger than RD in that while WSD straightforwardly orders us to implement precautionary measures in cases where the causal relations of relevant issues are unknown, RD adopts more moderate and careful expressions, saying that lack of full scientific certainty should not be used as a reason for postponing cost-effective measures.

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[6] https://www.gdrc.org/u-gov/precaution-3.html

I think that perhaps anyone who is thinking about the principles objectively will easily recognize that, on account of the extreme posture of the PCP in WSD, it might result in some unreasonable proposals. Let's consider again the case of prohibiting mechanical typewriters. It is possible that some people might feel that a future in which this prohibition was effected evinces some threat of harm to human health, even though no link between such a prohibition and harm can be scientifically confirmed. It is a matter of human life that there are people in this world who think in peculiar ways, although I am not entirely sure that there are any who would be anxious about potential harms to human health brought on by prohibiting mechanical typewriters. Yet following WSD literally, our societies would have to implement some precautionary measures even in this case. Is this acceptable as a reasonable policy?

Another possible case is the issue of mobile phones. Often fears are expressed that the radio waves of these devices might be harmful to our brains in the long run, although such harm has not been confirmed scientifically. Should we adopt a policy to immediately prohibit mobile phones? Honestly, I have great doubts about the reasonableness of either of the above policies. It is not because I suppose that the feared harms are utterly impossible, but because I am afraid that adoption of such policies would come at an excessive cost, in many senses, since this policy would have to be expanded to many other social decision makings. Such policies bind our society too firmly to allow for flexibility.

Perhaps, when WSD expresses "an activity raises threats of harm", it might be tacitly assuming some probability of harm. In that case, WSD might sound plausible to readers in terms of an implicit distinction between probable harm and improbable harm (where, for example, harm caused by prohibiting mechanical typewriters is supposed to be improbable). Nevertheless, such a distinction appears fiercely opposed to the original spirit of PCP. If WSD virtually considers probability behind its literal expressions, it might become a sort of PVP about risk, rather than a PCP about uncertainty.

6. Sunstein's criticism and risk tradeoffs

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As my arguments above suggest, PCP, especially that of WSD, is exposed to many kinds of theoretical doubts in spite of the fact that it has been successful in appealing to our psychological tendency to feel fearful about something seeming to be harmful. As far as I understand, PCP intrinsically depends upon the notion of uncertainty, where we cannot rely on the notion of risk, but since uncertainty itself is an unclear notion, PCP cannot be thoroughly convincing. On the other hand, PVP is not exposed to similar kinds of doubts because it seems that the notion of risk that comprises the core of PVP can be accepted as a notion more intelligible and realistic than uncertainty.

In order to understand which aspects of PCP are exposed to fierce doubts, it helps to refer to the arguments of American legal philosopher Cass R. Sunstein, whose reasonable examination of PCP is famous around the world.

According to Sunstein, PCP in WSD was paraphrased in a stronger way:

> The Precautionary Principle mandates that when there is a risk of significant health or environmental damage to others or to future generations, and when there is scientific uncertainty as to the nature of that damage or the likelihood of the risk, then decisions should be made so as to prevent such activities from being conducted unless and until scientific evidence shows that the damage will not occur. (Sunstein 2005, p.19)

I make two notes on Sunstein's interpretation. First, I draw attention to the fact that he, perhaps correctly, interprets the PCP in WSD as implying considerations based on the notion of risk, which seems, strictly speaking, to be opposed to the original idea of PCP. This interpretation encourages a reconsideration of the fundamental issue, namely, how to distinguish between risk and uncertainty. It seems to me that this distinction would, in reality, not be so sharp, so that it would be acceptable to talk about uncertainty as a kind of risk. Purely theoretically speaking, if we take uncertainty to be the assessment of a probability range, $0 < p < 1$, then it is possible to argue about risk and uncertainty in a compatible and seamless way. In fact, even probability would be used as a sort of range, e.g., from 70% to 90%. In this sense, it is not so strange for PCP to refer to probability.

Second, judging from WSD's expressions, we might have to take PCP as virtually intending to require the notorious idea of "zero risk". Sunstein points out precisely this issue, following the remarks quoted above.

> The words "will not occur" seem to require proponents of an activity to demonstrate that there is no risk at all----often an impossible burden to meet. (Sunstein, 2005, p.19)

It goes without saying that we are always involved in many risks. Therefore, if PCP requires "zero-risk", it must be arrant nonsense. In any case, Sunstein proposes his own tentative formulation of PCP, a working hypothesis that summarizes the essence of the PCPs in RD and WSD.

> When risks have catastrophic worst-case scenario, it makes sense to take special measures to eliminate those risks, even when existing information does not enable regulators to make a reliable judgment about the probability that the worst-case scenario will occur. (Sunstein 2007, p.119)

Some would like to apply PCP to a variety of cases, such as radiation exposure, although PCP was introduced, at least initially, to cope with environmental problems and GM foods.

Unfortunately, however, many crucial objections have been raised against applying PCP, at least when done so literally and without other reasonable provisos.[7] Indeed, it has been suggested that at worst, PCP actually exposes us to serious danger. The most fundamental objection is concerned with PCP's paying little or no attention to "risk tradeoff". Risks are like a balance, where, when one side is lower, the other is higher. When we try to reduce a particular risk, another new risk (sometimes unexpectedly) befalls us. The former risk is called the "target risk", and the latter "countervailing risk" (See Graham & Wiener 1997, Chapter 1). Sunstein raises an example about risk tradeoffs like this.

> Similar issues are raised by the continuing debate over whether certain antidepressants impose a (small) risk of breast cancer. A precautionary approach might seem to argue against the use of these drugs because of their

[7] As described later, PCP is usually applied together with other extra conditions or provisos. In that case, the name, "the precautionary principle," is not preferred, but the name, "the precautionary approach," is adopted particularly in the context of the US. As far as I understand, the precautionary approach is not the application of PCP itself at all, but rather some variant of PVP.

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> carcinogenic potential. But the failure to use those antidepressants might well impose risk of its own, certainly psychological and possibly even physical (because psychological ailments are sometimes associated with physical ones as well). (Sunstein 2007, p.127)

Another example Sunstein gives is as follows:

> The Precautionary Principle is often invoked in connection with genetic modification of food—a plausible concern of multiple risks potentially created by that practice. But many people believe that a failure to allow genetic modification of crops might well result in many deaths. The reason is that genetic modification holds out the promise of producing food that is both cheaper and more nutritious—resulting, for example, in "golden rice," which might save many lives in developing countries. (Sunstein 2007, pp.127–128).

Sunstein thus concludes, with evident sarcasm, that:

> The real problem with the Precautionary Principle, thus understood, is that it offers no guidance—not that it is wrong, but it forbids all courses of action, including regulation. Taken seriously, it is paralyzing, banning the very steps that it simultaneously requires. If you accepted the strong version, you would not be able to get through a single day, because every action, including inaction, would be forbidden by the principle by which you are attempting to live. (Sunstein 2007, pp.125–126)

That is to say, for example, PCP prohibits the use of antidepressants, but simultaneously requires their use (i.e., prohibits non-use). Thus, PCP is intrinsically destined to fall into a contradiction. If this is the case, PCP, particularly the PCP in WSD, cannot work as a principle of decision-making at all.

Nevertheless, why does PCP attract so many?

> The appeal of the Precautionary Principle, in the face of risks on all sides, present many puzzles. (Sunstein 2007, p.133)

> The more interesting answer is that the principle seems to give guidance because people single out a subset of risks that are actually involved. In other words, those who invoke the principle wear blinders. (Sunstein 2007, p.131)

This is nothing but a kind of cognitive bias. People tend, for example, to focus on the worst-case scenarios that might be caused by allowing GM foods and to be blind to the many deaths caused by prohibiting GM foods. In this sense, PCP on its own surely has a dangerous side, contrary to its initial motivation (i.e., saving people's lives).

7. Realistic applications of the precautionary principle

How, then, about the PCP in RD, which is the weaker and more moderate version? In fact, some doubt has been aroused toward RD as well. In particular, the concepts used in RD are so fatally vague that it is not possible to clearly understand what RD claims. Julian Morris has listed five drawbacks of the PCP in RD. 1) What is meant by "threat" is not clear. Threat so loosely defined, he says, "can include everything from the risk of the Thames flooding (which is reckoned to occur twice a century, giving an annual probability of 1 in 50), to the mere possibility that there might be an alien invasion." (Morris 2000, pp.13–14). 2) The concept of 'damage' is not clearly defined. How could we distinguish 'damage' from mere 'change' like in the aging of bridges? 3) It is not clear what "irreversible damage" is in RD. The death of any person is, by definition, irreversible. Morris puts the point like this.

> All change (and hence all damage) is irreversible in the strict sense that the precise structure of the world that pertained before cannot once again come into being. This is a consequence of the second law of thermodynamics wherein it is observed that the state of disorder (or entropy) of the universe is constantly increasing. (Morris 2000, p.14)

4) The notion of seriousness in 'serious damage' in RD is clearly a subjective one. To prohibit mechanical typewriters sounds almost trivial to some people, whereas to others it may be serious. 5) This world is, as a matter of fact, full of uncertainty by definition. In that sense, strictly speaking, RD sounds empty (ibid.). If I add another point, even the PCP of RD (as well as that of WSD) tends to focus only on one aspect of the relevant phenomena, thinking little of countervailing risks.

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Therefore, insofar as we consider only the initial formulations of PCP itself, and do so literally, we should come to judge that the PCP is self-contradictory and useless as a decision principle. Indeed, rather we should be afraid of the potential harm that PCP poses. If we force a PCP through, applying it to one single risk with little thought given to countervailing risks, PCP could expose us to more dangerous circumstances. As a matter of fact, PCP, construed literally, has not found universal acceptance, probably on account of the drawbacks discussed.

This point is confirmed in the light of the famous debates going back to the 1990s between the EC and US on "the European Community's ban on meat products treated with hormones" (Sunstein 2005, p.40). In this debate, the EC simply applied PCP, whereas the US admitted a PCP (that of RD) but in a different way. According to 'EC Measures concerning Meat and Meat Products (Hormones)' by WT/DS26/AB/R issued by World Trade Organization in 1998, the US claims:

> In the view of the United States, the claim of the European Communities that there is a generally accepted principle of international law which may be referred to as "the precautionary principle" is erroneous as a matter of international law. The United States does not consider that "the precautionary principle" represents a principle of customary international law; rather it may be characterized as an "approach"—the content of which may vary from context to context. (WTO 1998, p.18)

In this sense, it must strike us as strange that many still rely on PCP in spite of its drawbacks.

Sunstein, mentioning cases of catastrophe and our feelings of fear, points out correctly why this is.

> When intense emotions are engaged, people tend to focus on the adverse outcome, not on its likelihood. They are not closely attuned to the probability that harm will occur. They emphasize worst-case scenarios. The result is to produce serious distortions for both individuals and societies.
>
> At the individual level, the phenomenon of probability neglect results in indifference to small but statistically real risks, excessive worry, and unjustified behavioral change. Probability neglect also creates problems for law and regulation. (Sunstein 2005, pp.64–65)

"Probability neglect" is one main factor for why some apply PCP to many issues. This explanation fits well with PCP's original concern for uncertainty rather than risk. The problem of probability neglect, however, is that it might induce us to focus only on catastrophic outcomes whose probability is extremely low and not account for risk tradeoffs. Ironically, that might bring about another kind of catastrophic outcome, a result in opposition to the initial intentions of PCP.

Objectively speaking, however, there is a plausible reason that explains why many of those concerned strongly agree with PCP and would like to apply it to many cases. When concerned parties talk about PCP in actual and political situations, they in fact regard PCP as working, not in the simple form that contrasts with PVP, but in a way combined with PVP or other subsidiary provisos. As I have mentioned, European countries actually tend to accept PCP itself as almost universally applicable, but they do not neglect risk analysis. According to the 'Communication from the Commission on the precautionary principle':

> The precautionary principle should be considered within a structured approach to the analysis of risk which comprises three elements: Risk assessment, risk management, risk communication. The precautionary principle is particularly relevant to the management of risk. (Commission of the European Communities 2000, p.2)

If real-world application of PCP considers risk analysis, then PCP admits the introduction of some ways of thinking about probability, costs, and benefits. Indeed, the same document quoted above states that:

> Thus reliance on the precautionary principle is no excuse for derogating from the general principles of risk management. These general principles include: • proportionality, • non-discrimination, • consistency, • examination of the benefits and costs of action or lack of action • examination of scientific developments. (ibid. p.17)

PCP interpreted in this way could, in a sense, be assessed as a sophisticated version of PCP and, as a matter of fact, is clearly not so different from PVP or the standard cost-benefit analysis that includes considerations of risk. Its only proper character, as a PCP, focuses particularly on cases of uncertainty that follow after carrying out risk

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analysis, although, as I previously argued, it is theoretically difficult to figure out what uncertainty is and how we should react to uncertainty in a reasonable way. Actually, the same document says:

> Decision-makers need to be aware of the degree of uncertainty attached to the results of the evaluation of the available scientific information. Judging what is an "acceptable" level of risk for society is an eminently *political* responsibility. (ibid. p.3)

PCP must be applied together with a judgment about the "acceptable level of risk". Thus, PCP in this sense could or should be regarded as one variant of PVP. Such a PCP is exempted from standard criticisms against PCP itself, but I am afraid that such PCPs might lose their proper, unique character as PCPs.

8. Catastrophes

Nevertheless, ordinary people, who are neither experts nor scholars, tend to accept PCP in a literal sense (without considering the sophisticated version that includes risk management) and apply it directly to many seemingly catastrophic issues that incite anxiety about possible harm. This phenomenon actually happened in Japan after the 2011 Great East Japan earthquake (GEJE) and its subsequent calamity, i.e., the Fukushima Daiichi Nuclear Power Station Accident (FDNPS accident). In the case of Fukushima, about 1600 people were directly killed by the earthquake and tsunami. But what I would like to focus on is the fact that, after the FDNPS accident, more than 2300 people died in a way they would not have if GEJE had not occurred. Such tragic deaths were referred to as "earthquake-related deaths". Naturally, then, we should raise the question, "What caused such tragic deaths?"

The initial, naïve answer is "radiation exposure due to the FDNPS accident", since the emission of radioactive materials and residents' exposure to radiation appear as the most striking characteristics of the Fukushima area after the FDNPS accident. The answer implies that more than 2300 people died of harmful radiation exposure. Yet, as a matter of fact, this answer is wholly mistaken in the light of objective data on the doses of radiation to which the people in Fukushima were exposed. To confirm

this point, nothing seems to compare to the *UNSCEAR 2020/2021 Report*. According to 'Table 10. Estimated ranges of municipality- or prefecture-average effective doses to adults, children and infants (as of 2011) over the first year, first 10 years and to age 80 years' (shown below), the effective dose of radiation, on the average, of people in Fukushima, from infants to adults is mostly less than 5mSv in the first year, and the average annual effective dose in the 10 years since the FDNPS accident is much less than 2mSv.

Table 10. Estimated ranges of municipality- or prefecture-average effective doses to adults, children and infants (as of 2011) over the first year, first 10 years and to age 80 years

Age group in March 2011	*Ranges of municipality- or prefecture-average effective dose[a] (mSv)*		
	Group 2[b] – Fukushima Prefecture	*Group 3[c] – neighbouring prefectures*	*Group 4[d] – rest of Japan*
1-YEAR EXPOSURE			
Adult	0.079–3.8	0.10–0.92	0.004–0.36
10-year-old	0.10–4.5	0.13–1.1	0.005–0.43
1-year-old	0.12–5.3	0.15–1.3	0.005–0.51
10-YEAR EXPOSURE			
Adult	0.16–11	0.25–2.5	0.009–1.0
10-year-old	0.19–12	0.30–2.9	0.008–1.2
1-year-old	0.22–14	0.34–3.4	0.007–1.3
LIFETIME EXPOSURE TO AGE 80 YEARS[e]			
Adult	0.22–15	0.32–3.6	0.010–1.4
10-year-old	0.24–17	0.38–4.0	0.009–1.6
1-year-old	0.27–19	0.43–4.5	0.008–1.8

[a] The reported doses are ranges of the municipality-averaged doses for the Group 2 and Group 3 prefectures and the prefecture-average doses for the Group 4 prefectures. These estimates of dose are representative of the average doses received by people living at different locations and do not reflect the range of doses received by individuals within the population at these locations.

[b] Group 2 includes all municipalities or parts of municipalities of Fukushima Prefecture that were not evacuated municipalities.

[c] Members of the public living in the prefectures of Ibaraki, Miyagi, Tochigi and Yamagata.

[d] Members of the public living in the remaining 42 prefectures of Japan. This group now includes the prefectures of Chiba, Gunma, and Iwate, which were included in Group 3 in the UNSCEAR 2013 Report [U10].

[e] For adults, this is the dose from age 20 years at the time of the accident up to age 80 years.

(*UNSCEAR 2020/2021 Report*. table 10, p.66)

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Thus, the UNSCEAR Report points out:

> the Committee also estimated in that report that, compared to the baseline risk in the general Japanese population of total solid cancer, and cancers of nearly all specific anatomical sites, a general radiation-related increase in the incidence of such cancers would not be expected to be discernible. (p.85)

We should therefore ask again, why did so many "earthquake-related deaths" occur? The UNSCEAR report suggests the following:

> the Committee also noted that nuclear accidents of the magnitude of the FDNPS accident, and the associated protective measures, tend to lead to distress and anxiety from, among other things, disruption of life, loss of homes and livelihoods, and social stigma, which can have major impacts on psychological and social well-being [U10]. The Committee pointed out that evaluating such effects is not part of its mandate, although they are important for understanding the broader health implications of the accident. It also noted that the evacuation following the accident caused immediate aggravation of the condition of already vulnerable groups. (p.84)

In line with this suggestion, there are many research articles that have found that, generally speaking, severe hardship during and after evacuation should be understood as a major factor in "earthquake-related deaths" (See Nomura et al. 2013 and Murakami et al. 2015). They at least clarify that, retrospectively, it was not the best policy to give number-one priority to evacuation over all else. If that is the case, the question that we should raise next is, "Why were many people urged to evacuate?"

9. Causation in the precautionary principle

Of course, people felt fear about radiation exposure just after the FDNPS accident. That is completely natural. I really sympathize with them, as most had never experienced an accident at a nuclear power station and many lacked both precise information about the doses of radiation emitted from the FDNPS and detailed knowledge about the health implications of radiation exposure. In addition, mass

media and some scholars emphasized the dangers of radiation exposure (unfortunately) without referring to the probabilistic nature of radiation's influence on human bodies in terms of the dose (i.e., quantity) of radiation exposure. As a result of these factors, many people were psychologically pushed to engage in evacuation, some of which were too excessive, at least seen retrospectively.

As far as I understand, such a syndrome of fear has been, consciously or unconsciously, prompted by a way of thinking that corresponds with PCP. People focus only on the possible harm of radiation exposure, taking it to be uncertain, in opposition to the standard scientific predictions based on long-term epidemiological research accumulated over some 80 years since the Hiroshima and Nagasaki tragedies. Actually, as far as the issue of radiation exposure is concerned, we need to think in a fundamentally quantitative way rather than simply following the original PCP taken in a literal sense.

I would like to propose an analysis of this issue that finds that PCP is supported by our idea of a causal relation between a particular behavior or strategy and catastrophe. This can be expressed in the following diagram, where the arrow stands for a causal relation.

WSD actually refers to a "cause and effect relationship", and RD seems to imply causation when it mentions "scientific certainty".

I have no choice but to skip over the details of the philosophy of causation here. For the time being, then, I adopt a conditional approach to causation, which is formulated as follows:

If C (cause), then E (effect)

I believe that my formulation is not necessarily unjustifiable. On the one hand, counterfactual conditional analysis has been one of the most dominant and influential approaches to the problem of causation (since Hume and Lewis).

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O (*c*) □→ O (*e*) and ~O (*c*) □→ ~O (*e*)

(Lewis 1986, p.167)

O (*c*) means that event C occurs, and □→ works as a counterfactual conditional operator. According to the counterfactual analysis, if those sentences are true or satisfied, then we could judge that *c* is the cause of *e*.

On the other hand, if we accept what is called the "Stalnaker's Hypothesis", or more traditionally, the "Ramsey Test", then we can formulate the idea of "Probabilistic Causality", which could be one of the commonsensically acceptable views on causation, in terms of a conditional sentence. Pr (*q*) means the probability that an event *q* occurs, "→" works as an indicative conditional operator, and Pr (*q*|*r*) means the probability that an event *q* occurs on condition of *r*'s occurring.

Stalnaker's Hypothesis (See Stalnaker 1981, p.120)

Pr (C → E) = Pr (E|C)
for any C, E, such that Pr (C) > 0

This hypothesis is formed in indicative conditionals. We must then note the most basic formulation of "Probabilistic Causality" as follows:

Pr (E|C) > Pr (E | ~C)
which suggests that C could be a candidate of E.

Of course, we must face Lewis's "Triviality Results", if I hope to justify my adoption of the idea of probabilistic causality by Stalnaker's Hypothesis. I have no room to solve this big problem here, but I could suggest that Lewis's argument is proposed by basically presupposing truth-functionality, so that if we reject the truth-functional approach to conditional sentences, then we could, for the time being, apply the idea of probabilistic causality without being bothered by Lewis's attack.

I add my own point to these two philosophical viewpoints on causation. Typically speaking, I understand that counterfactual conditional analysis is basically concerned with causal judgments about past events (corresponding to "but for test" in

jurisprudence), whereas probabilistic causality tends to focus on causal inference towards future events from the present point of view. The main question for us, then, is, "To which category, causal judgment or causal inference, does the causal relation between 'a particular behavior or strategy' and 'catastrophe' in the PCP belong?"

10. Two kinds of conditionals

To clarify this point, we should understand the characteristics and differences of indicative conditionals and counterfactual conditionals. With regard to this distinction, I rely on Edgington's argument and Adams's arguments. Edgington argues as follows:

> One can suppose that A, taking oneself to know that not-A; and one can suppose that A, not taking oneself to know that not-A. Typically, the subjunctive or counterfactual conditional is the result of the first kind of supposition, the open or indicative conditional the result of the second kind. An apparent difficulty which actually clarifies the point: I take myself to know that the carpet I am now looking at is not red. I may say 'If it had been red, it would have matched the curtains'. But I may also say 'If it is red-well, I have gone colour-blind or am suffering some sort of delusion'. In the subjunctive, I am taking it for granted that I am right in thinking it is not red. In the indicative, I am supposing that I am wrong. I am considering it to be an epistemic possibility that it is red, despite appearances. (Edgington 1991. pp.178–179)

Adams puts the contrast like this:

> A typical situation in which the two conditionals differ is that in which their common consequent is known to be false, where the counterfactual is often affirmable while the indicative is not. . . .Two men are walking in the woods and spy a bird in the shadow in such a way that its color cannot be made out. One man might use the indicative in telling the other "If that bird is a canary it will be yellow". Now, however, suppose that the bird flies out into the sunlight, where it is clearly seen to be blue and not yellow. Under the circumstances the first man will be unlikely to continue to affirm the indicative—and indeed he should not, since learning the falsity of its consequent makes it too improbable to justify continued affirmation. On the other hand the first speaker will be likely to 'substitute the counterfactual for

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> the indicative' and affirm "if that bird were a canary it would be yellow. (Adams 1975. p.104)

As far as typical cases are concerned, we could probably summarize the contrast between the two types of conditionals in the following way.

Indicative conditional (IC) fits in well with the case that we do not surely recognize what actually happened (corresponding to the antecedent) and will happen (corresponding to the consequent), thinking in a prospective way (towards the future from the present point of view) with probability (setting aside the case for IC to be used in the past tense). In other words, IC mostly works in "causal inferences" towards the future.

Counterfactual conditional (CC) fits in well with the case that we are basically supposed to surely recognize what happened/what did not happen (corresponding to the antecedent) and to surely recognize what actually happens (corresponding to the consequent), thinking in a retrospective way (towards the past), basically without the notion of probability (setting aside the problem of applying probability to CC and the complicated relation with subjunctive conditional). To put it another way, CC mainly functions in "causal judgments" about the past.

How about the causal relation presupposed in PCP? How should we understand such a causal relation as "if <a particular behavior or strategy> were adopted, then <catastrophe> would happen" (abbreviated as CRPCP)? Is this conditional indicative or counterfactual?

The first point to confirm is that this is obviously a future conditional (FC). This point seems to suggest that CRPCP is indicative by definition. In addition, in IC, both the antecedent and the consequent are not surely recognized. This character seems to conform with CRPCP. Is CRPCP thereby an indicative conditional? If so, CRPCP in the case of radiation exposure should be formulated as follows:

> If people will continue to be exposed to radiation for long term, they will face a catastrophe.

Yet, this formulation has a fatal drawback. PCP is characterized as the decision principle with "probability neglect" (please note that we focus on the original formulation of PCP in a literal sense, as with WSD or RD, since many tend to accept this formulation rather than the sophisticated version, as I pointed out). Contrary to this, an indicative conditional used in causal inference is basically formulated in terms of probability, as I have mentioned. Therefore, CRPCP has no affinity to IC.

Is CRPCP, then, a counterfactual conditional? At first glance, this interpretation seems to be very difficult to adopt, since CRPCP is a future conditional and CC is basically retrospective. It is certainly necessary to ponder this point. If we try to express CRPCP in the form of counterfactual conditionals according to Lewis's argument, it could be as follows:

> If we would have continued to be exposed to radiation long term, then we would have faced a catastrophe.
>
> or
>
> If we would not have continued to be exposed to radiation, then we would not have faced a catastrophe.

Both conditionals sound strange as CC, since both negations of the antecedent and the consequent seem to be not surely recognised. This situation appears to contradict the nature of CC.

However, let's stop to consider the consequent of this CC. Sunstein points out that:

> Visualization or imagery matters a great deal to people's reaction to risks. (Sunstein 2005, p.81)

and that,

> With respect of risks of harm, vivid image and concrete pictures of disaster can "crowd out" other kinds of thoughts, including the crucial thought that the probability of disaster is really small. "If someone is predisposed to be worried, degrees of unlikeness seem to provide no comfort, unless one can prove that

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> harm is absolutely impossible, which itself is not possible". (Sunstein 2005, p.82)

This is the very ground of "probability neglect" and the "zero-risk" requirement in the original version of PCP taken literally. That is to say, there is a tendency to envision the worst-case scenario as if it were right in front of us, when the worst-case scenario is taken to actually happen in reality. This way of envisioning seems to form the innermost core of PCP.

11. The precautionary principle and causal narrative

If that is the case, then the consequent of CRPCP should be interpreted differently from how we initially understood it. That is to say, CRPCP could be understood as claiming that, "If we would not have continued to be exposed to radiation, then we would not have faced a catastrophe", where the negation of the consequent (i.e., we have faced a catastrophe) is surely recognized as true. That must fit in well with the nature of counterfactual conditionals. Certainly, it also seems to be true that CRPCP has the character of "probability neglect", perhaps in common with CC, because in this interpretation, events denied in the antecedent and the consequent appear to have been taken to have already happened, in which case, probability does not seriously matter.

Nevertheless, unfortunately, it cannot at all be denied that CRPCP is, formally speaking, a future conditional (FC), and CC works the best in a retrospective way. Furthermore, there is still a problem of how to understand the status of the antecedent in CRPCP (Is it, like in the case of the consequent, taken to be a true fact that we have already continued to be exposed to radiation?). It still seems to be hard to identify CRPCP as a kind of CC.[8]

[8] Actually, this indecisive situation might reflect how the debate about future conditionals (FC) proceeds currently. E.g. see Gibbard & Harper 1981 (which claims that FC is counterfactual), Morton 2004 (which argues that some FC are indicative, others are subjunctive.), and Bennet 2003 & DeRose 2010 (which propose arguments that FC is indicative).

Yet, in any case, very unfortunately again, recognition of catastrophe is not an authentic recognition but a pseudo-recognition. We should rather say that such a mental representation is no more than an illusion or imaginary fiction. In other words, this is a confusion of fiction with actuality. If so, we should say that CRPCP is highly irregular or utterly inappropriate as a causal claim. In contrast to "causal judgment" in counterfactual conditionals and "causal inference" in indicative conditionals, I would like to call the causal claim in CRPCP "causal narrative".

In addition, if the recognition or declaration of the CRPCP based on causal narrative somehow harmed other people by urging them to undertake the hardship like behaviours of evacuation as in the case of FDNPS accident, then we should raise a question about the moral (or even legal) responsibility of those who insist on this CRPCP. Perhaps, as far as I understand, their failure to examine (though not of course as experts) the health effects of radiation exposure in epidemiological research could be regarded as the cause of harm. That is to say, I suppose that the (higher order) cause of the causal narrative must also be scrutinized after confirming the context of the causal narrative. I mean to focus, in this line of thought, on negligence or omission at the epistemic level. I intend to investigate this issue in terms of "causation by absence", referring to "the ethics of belief", an area of discussion created by W. K. Clifford (See Clifford 1999).[9]

I add two final notes. First, if we take our psychological fear into account in order to understand hazard or catastrophe, causal narrative might be one factor to be considered when making decisions from a reasonable point of view. That is, there might be cases where such causal narratives must be treated as realistic in a not-straightforward way. Second, if we are more or less convinced that the original version of PCP taken literally is a decision strategy, in spite of the fictitious nature of its "causal narrative", we might tacitly and gradually step into the region of "causal

[9] The ethics of belief Clifford developed discusses moral assessments about an epistemic process, namely, the process of making beliefs, then claims that if we have beliefs only with insufficient evidence, we should be morally blamed. I reformulate this argument by focusing upon causal relation between checking evidence and making beliefs. That is to say, if we omit carefully checking the evidence for having a particular belief, then we have to be morally blamed. This line of argument sounds similar to what is called "virtue (vice) epistemology". However, virtue (vice) epistemology discusses the character of agents themselves from moral viewpoints, whereas the ethics of belief highlights an epistemic process (a kind of action or inaction) of agents.

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inference" in which we consider probability from the point of view of the present. In other words, even if people seem to appeal to the original version of PCP in a literal sense, they virtually conceive of something close to the sophisticated version of PCP. However, as I noted before, the sophisticated version approaches the idea of PVP, in which case PCP might drastically lose its unique persuasive power. In any case, we should admit that the boundary between "causal narrative" and "causal inference" is intrinsically vague.[10]

In conclusion, some people virtually adopted PCP in the case of the 2011 FDNPS accident and chose to be evacuated promptly and/or long-term, resulting in miserable tragedy (like the large number of disaster-related deaths). Retrospectively, such an application of PCP was not recommendable, since it both led to harm and was not justifiable in a reasonable way. In times of disaster, we should consider risk tradeoff very carefully and not blindly appeal to PCP by focusing on only one risk. To be clear, I am acutely aware that such considerations would be hardly feasible in emergent situations, particularly like in the case of FDNPS accident, as many people did not expect such a severe accident and had no detailed knowledge on radiation exposures. All that I hope to propose here is that we could have reasonably considered risk-tradeoff some weeks or months after the accident by checking the information and studying the phenomena of radiation, which could result in somehow reducing earthquake-related tragedies. That proposal concerning PCP, I suppose, could be applied to any kind of disaster and accident.

Of course, the dead never return. But we should learn bitter lesson in preparation for some possible disasters and accidents in the future. To survive, we must step forward.

[10] Even from a theoretical point of view, we could say that obviously the boundary between "causal narrative" and "causal inference" is intrinsically vague, because causal narrative having the stance of probability neglect could be interpreted as a (special) kind of stochastic claim with probability ranging from 0% to 100%, and causal inference could be often offered with a range of assigned probability, e.g., from 80% to 90%, or extremely speaking, a range from 1% to 99%, which is virtually almost the same as the case of probability neglect. This point is corresponding to what I have suggested previously in the section 6 with regard to the vague distinction between risk and uncertainty.

▸This article is based upon chapter 6 of my book, *Philosophy of Life and Risk: Towards living resiliently in times with disease and disaster* (published by MYU in March 2021 in Japanese) and my presentation, "Disaster, Precaution, and Causation: In the Light of Cass Sunstein's Philosophy" (*The American Philosophical Association Pacific Division The 94th Annual Meeting,* online. 9 April 2021). The session where I gave the presentation was co-organized by APA and the Philosophical Association of Japan. I am deeply thankful for Professor Masato Ishida to arrange this session. In this article I made a drastic revision to my previous argument and added new points.

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Fukushima and the world's devastation

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***Abstract**: This paper reflects on our current ecological situation, from the Fukushima Nuclear Disaster. With the help of Felix Guattari's ecosophy, I explore the milieu of the disaster, and what it means to consider that we are already living in a devastated world. The Fukushima disaster and the events that followed appear as revealing how capitalism considers humans, the earth and social agency. I reflect on how various activist networks engage the question of the modes of valorization, and how situated knowledge and practices can help us reconsider the problem of attachments.*

I was not in Japan on March 11th 2011. I was at home, in the safety of Brussels. It was through my mother that I heard about the disaster that was taking place, as her cousin, who lived in the suburbs of Tokyo, had warned her of an unprecedented earthquake. I started following the news, first with curiosity, then with shock and fear. I must admit that I thought my mother was exaggerating, and that Japan was prepared for earthquakes better than we would ever be in Europe. I was not prepared, nor were we prepared for what followed, and the unfolding of this disaster became multiple, by all the dimensions it entangled. The nuclear disaster now called Fukushima showed once again to what extent the beings of our world, the living, the technical, but also the psychological and the social, are inextricably mixed.

This text not the result of a close experience with the disaster, nor of intense fieldwork. Although I have returned to Japan several times since then, I did not conduct fieldwork in the Fukushima prefecture. Nevertheless, I continued to read, watch and follow everything I could find related to the situation of the March 11th disaster and the post-Fukushima situation. I exchanged with Japanese friends from here and from Japan, I have written and worked on disasters with philosophers who try to think 'ecologically' about the world we live in. This work is therefore derived from this somewhat distant point of view, and will not claim to be exhaustive, an impossible task regarding this question anyway.

In this text, I will work on the Fukushima nuclear disaster as a disruptive event in the way our world makes coherence. It is an ecological event in the strongest sense of the word, in that the disaster not only exposes the ties that bind our world, but also

allows us to criticize and rethink the way in which these ties are produced. Indeed, Fukushima was first of all this realization of the non-permeability of our categories of thinking: the disaster affects all our registers or domains: technical, natural, social, scientific and citizens, politics and knowledge, etc. As we will show, the disaster, by trespassing the borders between all these categories, shows us how they are usually put in relation, or kept separate.

The cesium-loaded winds do not care about geographical boundaries, but they have also crossed and upset the boundaries between science and politics, sociology and nature, as well as between economics and climate science. But Fukushima not only shows that everything is connected. We all know that very well. What the event shows is the strange and highly questionable way in which all these fields and objects are connected[1]. Fukushima shows us how our lives are shaped by the coherence of a nuclear-powered capitalist industry. Whatever starting point we take, we are forced to connect to others, one by one. The disaster exposes the way in which the nearest connects with the farthest.

This text will explore these connections with the help of a double heritage. The first one is the heritage of William James' pragmatism,[2] who proposes to think a situation through the effects it produces. For James, the truth of an idea lies in its consequences, both intellectual and practical. I will explore the situation of Fukushima through its consequences. My second heritage will be Deleuzo-Guattarian or Guattaro-Deleuzian,[3] since I will be thinking the situation of Fukushima as an assemblage, where the articulations of our ecological situation need to be explored anew. I will work on the situation in terms of what it reveals about the machinic character of our world, i.e., the way in which the coherence of that world is produced.

I will therefore address the question of what the disaster, but also its management, teaches us about our ecological situation. How is this disaster possible? And how is it possible that, after this disaster, nuclear power continues its technological trajectory with only a few more or less cosmetic technical adaptations? What does it mean that everything continues?

For me, thinking along the lines of Guattari's late work, Fukushima is primarily an expression of a world that is already devastated, even before the disaster adds its share

[1] Thom van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (Columbia University Press, 2014), P. 60.
[2] William James, *Pragmatism*, Dover thrift editions (New York: Dover Publications, 1995).
[3] Gilles Deleuze et Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, translated by Brian Massumi, 2nd edition (Minneapolis: University of Minnesota Press, 1987).

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of destruction. The expression "living in a damaged world" is often used,[4] and I would like to extend this observation. For me, it is not simply a question of denouncing or coming to terms with this world, but also of thinking that even our ways of thinking, feeling or being together are themselves "devastated".[5] I would like to unfold here what this situation of a damaged world can demand in terms of thinking and ways of problematising our ecological situation.

Evacuate

Amidst the rubble of the tsunami that devastated the coast of Tohoku and killed nearly twenty thousand people, evacuation orders arrive following the radioactive releases from the Fukushima power plant. For a radius of 20, then 30 km, you have to leave, empty the land. You have to leave the land of your ancestors, and no one knows how long this will last. Zones are designated, from which you have to flee in a hurry, and to which you can only return for a few hours, only with autorizations. In the areas doubly affected by the tsunami and the nuclear accident, the search for the missing (not to mention saying goodbye to the dead) has not yet been completed, and people already have to escape. Tens of thousands of displaced people are being sheltered in emergency accommodation, which will become housing in the medium term and will last for several years.

This evacuation, this temporary life of exile that extended into the long term, has been extensively documented: photographers, videographers, journalists and writers have dramatised its scope. For example, the film Memories of a Lost Landscape[6] takes us through the fate of a family of evacuees, the way of life in this region of Tohoku, the temples that are lost, the gods that are forgotten, the practices that are relegated to oblivion (such as salt production), but also the difficulty, as an independent journalist, of reporting on what was happening in the evacuation zone at the time. Others have documented those who refused to leave, acting as quasi-mythical figures of sacrifice, for the land and its animals.[7]

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[4] Anna Lowenhaupt Tsing et al., Eds., *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, 3rd ed. edition (Minneapolis: Univ Of Minnesota Press, 2017).
[5] Nicolas Prignot, « Félix Guattari et l'écologie de la dévastation », *Rue Descartes* 88, nº 1 (2016): 138–46, https://doi.org/10.3917/rdes.088.0138.
[6] Yoju Matsubayashi, « Fukushima: Memories of the Lost Landscape (Soma Kanka Daiichibu: Ubawareta Tochi No Kioku) » (Japan: Tofoo Films, 2011).
[7] Antonio Pagnotta, « The last man in Fukushima », 2013.

Others, like the documentary series "Uncanny terrain",[8] show us the daily work of those living in the border areas of the evacuation. We follow the work of farmers, trying to make their land suitable for cultivation again, exploring with the help of Geiger counters how they can cultivate land that is otherwise doomed to abandonment after being tended for generations. We follow them, weighing their rice production, trying to reach the lowest possible level of becquerels per kilo, always keeping in mind the thresholds beyond which their production will be destined to become radioactive waste. These farmers bear witness to concrete practices and thoughts, in touch with a problematic situation, without naivety.

What I would like to emphasize here is the terrible tension created between uprootedness and the fear of living under the risk of permanent nuclear pollution. What this disaster shows through the exodus from contaminated areas is first of all how difficult it can be to understand and justify attachment to a place. In other words, what Fukushima does, and what made it possible, is to transform the inhabitants into people without attachments. The evacuation creates people who no longer have a right to a densely populated environment, to a world that they value. It should not be said that those who advocated the exodus think that anyone can live anywhere, but that the disaster and its management presuppose that one can think like that.

The effect of Fukushima is to suggest that people all over the world, who live near a nuclear power plant, must know that one day they may be "anyones",[9] people with no ties, who can be moved around at will in the event of an accident. Nuclear management produces spaces empty of any particular lifestyles, empty of the lives that make them so rich. All of our lives must be interchangeable, so that we can simply be moved elsewhere, replaced, without being able to say that there has been any real destruction in that very displacement.

It is also part of the disaster that we do not have many words to say to what extent this uprooting is also a very strong structural violence.[10] The nuclear risk requires that we can think of individuals, concrete people, in this way. This is of course compatible with what mass capitalism proposes: individuals defined by their desires for consumption, and who are also standardized through this same consumption. Uniformity of desires and uniformity of consumption in the same gesture, in order to

[8] Nicolas Prignot, « Malgré Fukushima. Récits de cultures improbables », *Gestes spéculatifs. Paris: Les Presses du réel*, 2015, 73–86.
[9] Tobie Nathan and Isabelle Stengers, *Médecins et sorciers*, Nouvelle éd (Paris: Empêcheurs de Penser en Rond, 2004).
[10] Cécile Asanuma-Brice, *Fukushima, dix ans après: sociologie d'un désastre* (Éditions de la Maison des sciences de l'homme, 2021).

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produce individual consumers who are ready to consume, i.e., to live, everywhere, in all cities, in much the same way. This capitalism of mass consumption helps to make possible what nuclear power requires: to make individuals interchangeable, to make spaces not empty, but 'empty' in case of catastrophe. Places without history, without people, without gods, without land.

In the months that followed, many people wondered as to whether leave the powerplant's surroundings zone or to stay. In each case, the choices were made for specific, personal and different reasons, although there were certainly social factors that constrained these choices. It is certainly easier to start a new life in a different city as a young person trained in a job that is easily relocated than for an older person used to a life that depends on local conditions. But what is important here is not to know who was right, I will not do that, but to underline the difficulty of answering this question in the abstract. To be more precise, ignoring situations in order to answer in the abstract is a trap that those who want to simplify the situation are bound to use.

For example, focusing only on the level of ambient radioactivity can be problematic. We know the struggles that were necessary to know the precise contamination levels of the areas around the power plant. It was the inhabitants who took direct control of the measuring instruments and set up groups to monitor and map radioactivity, who did not trust the government's measures, which were too isolated.[11] Measurement was and remains an important issue.

But focusing on this single measure can also become a trap, as some will then hold this single measure as the sole issue of legitimacy of the choices regarding departure or even return. The mere measurement of radioactivity taken as an abstract datum can have devastating legitimizing effects. For example, it will be said that below a certain number of milliSivert/year there is simply no reason to leave, or to refuse to return. This single measure then becomes the single scale to which the whole catastrophic situation is reduced. It is a technocratic and bureaucratic reduction that ignores all the concrete situations, all the difficulties that living in these areas can cause. Starting with the fact that these measures show above all the great local disparities, the famous "hot spots", but also the forest areas, and that the fact of living near a power station always in an accident situation is not reassuring. This single measure can also play into the hands of those who think that since the level is harmless, all the difficulties encountered on site are "only" psychological.

[11] Azby Brown et al., « Safecast: Successful Citizen-Science for Radiation Measurement and Communication after Fukushima », *Journal of Radiological Protection* 36, nº 2 (juin 2016): S82-101, https://doi.org/10.1088/0952-4746/36/2/S82.

Psychologisation

In the years following the evacuation, many denounced the situation of the displaced population. This situation was indeed catastrophic and some still suffer from it today. Many deaths occurred, including a large number of suicides. It should be noted that these deaths were indeed counted as a secondary outcome of the March 11th disaster. There was no question of dismissing these deaths as not directly related to the disaster.

But in the press and even in international academic research, some claimed that the deaths could be attributed to a "fear"[12] of radiation, a fear that was delegitimized as there would be no reason to fear small radiation exposure. The displaced people were dying from the fear of radiation more than from the radiation itself, in doses too small to actually kill.

Where does this idea that it is the fear of radiation that kills come from? How can we understand the isolation of this single cause? Why not talk about the whole disastrous situation in which these populations find themselves, a situation that could be blamed without saying that it is simply a question of some internal psychological factor. Here again, it is a radical simplification of the situation. Indeed, it is possible to unfold the environment in which this excess mortality occurs, to speak, for example, of the isolation that these people undergo, the uprooting from their land, the loss of social ties and sometimes of loved ones, the social opprobrium, the impression of being a burden for a society that is doing everything it can to forget the Fukushima event, and so on.

Why then speak simply of fear of radiation? This is both an error of psychology as a scientific discipline and an oversimplification. "Fear" is here a scapegoat, entirely internal to the people, and removes the responsibility for these deaths from the entire environment (and therefore from all post-disaster management).

Of course, the difficulties of having experienced such a disaster are real,[13] but reducing the multiplicity of causes to simple "fear" is a useful simplification for those who want to deny the reality of the nuclear risk. It also allows one to never question the management of the evacuation and the complexity of what it entailed, and places the responsibility on the subjects themselves—they died because of their own fear.

[12] Shizuyo Sutou, « A message to Fukushima: nothing to fear but fear itself », *Genes and Environment* 38, nº 1 (2016): 1–9. https://doi.org/10.1186/s41021-016-0039-7

[13] Yoann Moreau, *Vivre avec les catastrophes* (Presses Universitaires de France, 2017).

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This adds up a multiplicity of things experienced in a single, very arbitrarily decreed variable: fear. This makes it possible to continue to reduce all the consequences of a nuclear accident to a single variable, which is exposure to radiation, and to continue to assert that there is therefore nothing serious, since exposure is low.

Thus, the gesture of drinking some water from Fukushima to show that one is not afraid is exemplary: drinking a glass of water,[14] even if it is cesium-polluted, has nothing to do with the situation created by displacement and living in makeshift housing for years. Yet Fukushima has produced people capable of making this equivalence, capable of claiming that simple fear is responsible and can be fought in this way. This prevents "thinking through the milieu" in the sense of Deleuze and Guattari,[15] since it empties the milieu of any capacity for action, and thus of any responsibility. It is therefore a very serious mistake to psychologize things in this way, as well as being an insult to all those who had to experience this evacuation.

There is a strange difference between the difficulty of counting the effects of radiation and the simplicity of identifying a psychological cause. Of course, it is difficult, without a long cohort, to detect precisely a long-term effect of relatively small doses of radiation. But why not have the same methodological requirements when it comes to talking about "stress" or "fear"? Why the very precise and legitimate requirements on the one hand and the lack of precaution on the other hand? This too is an important question that refers to our situation of a devastated world. Psychology is not used to its full potential here, it only serves as an easy excuse for those who want to exonerate ionizing radiation. "Fear" is used as a catch-all here, it is an instinctive attribution that is based on almost nothing. Beyond the error, the effects of this attribution are terrible, since it not only exonerates radiation, but also accuses those who maintain legitimate questions around nuclear pollution of spreading fear - and thus sustaining a factor that is killing people. It reinforces the idea that the main thing to do is to reassure people, who are always seen as vulnerable, impressionable, and a part of the problem.

Thinking through the milieu

[14] Yoree Koh, « Lawmaker Takes Acid Test on Fukushima Water », *Wall Street Journal*, 1 novembre 2011, sect. Japan Real Time, https://www.wsj.com/articles/BL-JRTB-10963.
[15] Deleuze et Guattari, *A Thousand Plateaus*.

"Thinking through the milieu"[16] is a complicated matter. The French "milieu" here has the advantage of mixing two meanings, both the middle (which would be opposed to the beginning and to the end) but also the environment, what allows something to exist. To think through the milieu is both to think in situation, without a logical unfolding that would attribute a beginning or an end to thought, but also to think the situation as it relates to its environment.

One of the testimonies we received of this situational thinking is precisely that of the farmers who tried to continue working in the regions around the nuclear power plant, the areas that were not evacuated but which had nevertheless been polluted by the radiation. It was not a matter of them blithely accepting the situation, but of trying to think how to continue to live with their land despite it being polluted. Of course, they denounced the pollution, and their attempts to find a way to deal with it did not mean a tacit acceptance of their situation. It was a matter of being able to take note, and to experiment with how to continue to have a relationship with the land.

Here too, the importance of this relationship to place or land may seem derisory, or even unjustifiable in the light of the situation. Yet it is an important lesson to be learned in these times of ecological disaster. The farmers of Minamisoma were the ones who had to learn to live in a damaged world, despite themselves. Again, this questions the environment in which the disaster occurs: why is it so difficult to express attachment? Why is it so easy for TEPCO to offer compensation to the farmers, as if compensation would cover all the loss of not being able to farm?

There are of course reasons to look for in the idea of generalized equivalence, as Jean-Luc Nancy has well noted.[17] The idea that compensation requires is that one can make almost anything equivalent to anything else, via the mediation of money. One thing is worth another, and money serves as a general equivalence. So land (which has become agricultural income) can be replaced by financial compensation, and the actors are free to do what they want with this money. Compensation is of course the least that can be done, but it makes as if, with financial replacement, the disaster and its effects could disappear. To speak of compensation on the part of those responsible for the disaster is to make a lifetime of work, knowledge, practices, love of place and production of the land equivalent to a mere market value.

Fukushima did not create this equivalence, which is an old story. But the nuclear energy production insists on this equivalence, it lives on it. Nuclear disasters

[16] Deleuze et Guattari, *A Thousand Plateaus.*
[17] Jean-Luc Nancy, *After Fukushima: The equivalence of catastrophes* (Fordham University Press, 2014).

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must be able to pretend that all their consequences can be financially compensated. One can then argue about the amounts, but not about the idea that what is lost is incommensurable with a financial or market value.

Guattari thought this generalized equivalence, which makes everything transformable into anything and thus makes it possible to compensate for any loss, as part of a process of valorization, of creation of values. He claimed that there are no value without a machinic creation of value. Guattari's answer to this generalized equivalence was the pluralization of modes of significance: ethical, aesthetic, social, pathic, etc. It is important above all to be able to ensure that these modes of valorization are in a relationship of heterogenesis: to function together while retaining their heterogeneity, that is, in this case, without being translatable (and therefore equivalent) to one another. It is not a question of establishing absolute values, but of multiplying the scales by making each of them consistent. *"What makes that system reprehensible is its crushing of all other modes of valorization, which thus find themselves alienated from capitalist hegemony. That hegemony, however, can be challenged, or at least made to incorporate methods of valorization based on existential productions, and determined neither in terms of abstract labour time, nor of expected capitalist profit. Computerization in particular has unleashed the potential for new forms of 'exchange' of value, new collective negotiations, whose ultimate product will be more individual, more singular, more dissensual forms of social action. Our task—one which encompasses the whole future of research and artistic production—is not only to bring these exchanges into existence; it is to extend notions of collective interest to encompass practices which, in the short term, 'profit' no one, but which are, in the long run, vehicles of processual enrichment".* [18] Not an intrinsic value of nature, but plural processes of valorization, which must be able to coexist.

Time to return

The reconstruction of the Tohoku coast is a very long, titanic process. After clearing the areas destroyed by the tsunami, from which millions of tons of debris had to be removed, it was decided to rebuild, while raising the dikes, transforming a long stretch

[18] Felix Guattari, « The Three Ecologies », trans. Chris Turner, *New Formations*, no. 8, 1989, p. 146. There is another more complete version in English of the text: *The Three Ecologies*, trans. Ian Pindar and Paul Sutton, London and New Brunswick, The Athlone Press, 2000.

of coastline (400km) of the region into a long wall reaching 14m high. The area now lives behind a wall, with no view of the ocean. Again, many asked whether building this wall was really the best solution, proposing, for example, that housing should no longer be built on the seafront, but on the hillsides. The technical solution was favoured by the Japanese government, even if its effectiveness is considered very relative.[19] According to the analyses of the areas where such walls existed, rather than really protecting the inhabitants of the coast, the wall mainly allows to slow down the advance of the tsunami and to gain time to escape the deadly waves. This gained time certainly saved many lives.

The vision of this long wall separating the sea from the coast is impressive, and cannot fail to raise questions about what is at stake. It is reminiscent of the walls in those futuristic novels, where coastal cities protect themselves as best they can from rising sea levels due to global warming. There have been calls for what is seen as a technical solution to a housing problem: some have suggested that we should no longer build at heights that are likely to be threatened by future tsunamis. Of course, this sometimes represents large areas, but why continue to build in these areas, which are bound to be invaded by future disasters? It is above all a question of continuing to do the same thing after the tsunami, as if nothing were to contradict the urban choices made up to then.

Urbanization choices are crucial to ecological and lifestyle issues. Urban sprawl requiring the use of cars forces a technological and development trajectory that engages an entire way of life. The choice to build a protective wall is like the testimony of the difficulty to question the choices of urbanization in contemporary Japan.

It seems to me that a lot of things in the management of the post-March 11th period reflects the same logic of not questioning the strategies adopted until then. It is as if urbanization was also a reflection of the strategy adopted in relation to nuclear power: raising the level of safety in the face of a risk (or raising the level of risk that will be considered), but without fundamentally changing the way in which the question of energy and its uses will be raised. Indeed, after the Fukushima disaster, the restart of Japanese nuclear power plants was conditional on an improvement in safety conditions, or on a reassessment of the risk. The reconstruction of the coastline is a mirror image of this restart, since it is a question of reinforcing the protections but

[19] Rémi Scoccimarro, « Tsunami de béton: de l'empreinte à l'emprise sur les paysages littoraux après les catastrophes du 11 mars 2011 », *Projets de paysage. Revue scientifique sur la conception et l'aménagement de l'espace*, nº 23 (2020).

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without fundamentally changing the way of living and using the space that is linked to it.

The other major titanic work related to the disaster was the nuclear clean-up. The area to decontaminate is huge, as the clean-up requires to remove a few centimeters of earth in all the inhabited areas. Not all of the area is cleaned, since the harder-to-reach areas such as the forests that cover a large part of the territory are not. Following the clean-up, the areas around the plant were gradually opened to the return of evacuees. As the level of radioactivity dropped and the soil was removed, the Japanese authorities considered that evacuees could return home. Financial support for evacuees was withdrawn, but only few percentage of them returned.

The narrative may seem simple: the area was polluted, it was cleaned up, everything is back to normal. Everything is done to give the impression that the situation is under control, and that the nuclear accident can be reabsorbed, cleaned up, just like the Tohoku coast was rebuild.

Nevertheless, a little self-control will be required of those who return. They will have to avoid picking mushrooms, they will have to avoid growing rice or eat it only after its radioactivity level has been measured, they will have to get meters, etc. In short, the situation is under control, but there is nevertheless a self-control to be implemented, in order to live in a contaminated zone. By using the knowledge developed after the Chernobyl accident, one will teach the inhabitants how to behave properly, and thereby transfer to them the responsibility for their health. After these measures, the inhabitants will now be responsible for their health.

Here too, one senses the trap situation, the infernal alternative. What to choose between staying away, but without evacuee status and without financial assistance, or returning to depopulated, emptied areas, under sanitary restrictions and becoming solely responsible for one's health? This return is the result of deliberate omissions, as summing up the situation as « an area that has been cleared » is far from the truth.

The small number of returnees tends to show that this life of return is not simple. First of all, there are all those who have rebuilt their lives elsewhere, after nearly ten years of exile. But for those who remained as evacuees, the return areas are empty, depopulated, without any of the basic services of community life. Everything has disappeared, shops, local services, everything is deserted. Community life has been reduced, as neighboring inhabitants have been dispersed. Moreover, life is under permanent control, and under daily fear, in the form of latent stress, not to mention the proximity of the power station, which is still under very partial control. Those who

only talk about the level of ambient radioactivity forget that these areas have been deeply transformed, devastated by the disaster.

For those who decided to stay in the area, who fought against TEPCO, and who tried to find new ways of living with radioactivity, seeing their practices used by the Japanese authorities must not be easy. There is a real capture here, a transformation of the will of some to stay into an injunction to return, taking those who have stayed as an example or model. However, the will to stay and to experiment—despite TEPCO, despite the disaster, despite the pollution - has nothing to do with the organization of a return under the illusion that everything is normal, or an injunction to resilience.[20] The two have nothing in common, or can only be transformed into each other by a cynical system that wants nothing to have happened at all. Those who stayed have been used to bring back the evacuees, in the most disempowering way possible—by making those who return responsible.

For example, there is a profound difference between the concrete experiments of those who try to cultivate their soil in the cleanest possible way, and the injunction of a government calling for the food produced in Fukushima to be eaten to support the reconstruction of the region. On the farmers' side, it is a matter of building confidence in their work, of doing everything possible to be able to cope with what is happening to them, in their practice. On the other hand, we are treated to a communication campaign that serves above all to make people forget the situation, to pretend that the disaster no longer has any consequences, and to pretend that there is no price to pay for Fukushima. On the one hand it is about living with the consequences, on the other hand it is about denying them.

Continuing with nuclear power

To continue with nuclear power after Fukushima is to somehow accept that other disasters will occur. When the Chernobyl plant exploded, it was associated with the communist regime, which was coming to an end, a model of government that was then the "enemy", of which this disaster was a symbol.

The fact that an accident occurs in Japan, one of the most technologically advanced countries, shows above all that nuclear power is dangerous in itself. It may well be said that there is no tsunami in France, as the French president at the time said

[20] Thierry Ribault, *Contre la résilience. À Fukushima et ailleurs* (L'Echappée, 2021).

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to brush aside the idea that such a disaster could happen in his country, but that says nothing about all the other potential sources of disaster.

To continue with nuclear power is to accept the idea that entire areas could be emptied, sacrificed in the name of producing the energy needed to maintain the economy. It means accepting the idea that huge areas could become, at worst, empty zones or ones where life will be conditioned to live in disaster. In theses strategies of decontamination and voluntary return lies the idea that these areas must be made into 'normal' living areas. The unacceptable is made normal in order to make it de facto acceptable. It becomes normal to ask people to live in an area where life is lived with a Geiger counter, with invisible pollution, of which we are told that the only thing to fear is fear. There is an attempt to produce the normal, or to change what 'normal' means.

Continuing with nuclear power is also a profound change in our understanding of temporality. The Fukushima disaster is still happening, as is the Chernobyl disaster. As we saw, for example, when the Russian army invaded Ukraine, one of the objectives at the beginning of this war was to take over the site of the old nuclear power station. Chernobyl then became a strategic objective, which made the whole of Europe anxious. What did Russia want to do with this sleeping monster under control? Without permanent control, the disaster could happen again, and the pollutants could be dumped on the continent. In Fukushima too, the disaster will continue. More than ten years later, TEPCO is struggling to know exactly what is going on with the corium at the bottom of the containment buildings. Bringing the plant under control requires the permanent extraction of sea water, which no one knows what to do with. We are a long way from the beginning of dismantling or finding a solution. This situation will have to be dealt with over several generations, and it is not clear how this will be done. In fact, on our time scales, this disaster is literally "endless". No one knows if, how or when it will end. We are fated to deal with these disasters beyond any conceivable time.

Beyond the disasters, this is already the case for nuclear technology, simply because of the waste it produces. The waste produced by the nuclear industry is dangerous for periods far beyond written human history. No one today knows what to do with it, except to hide it as deeply as possible underground. But even then, they will have to be managed endlessly, if only for access. How do we get the message across to future generations about whom we know nothing? What does it mean to try to get such messages across? John d'Agata[21] has clearly shown the derisory attempts

[21] John D'Agata, *About a mountain* (WW Norton & Company, 2011).

of linguists or semiologists to think about this question, whose conclusion is tirelessly that it is impossible to answer.

Even the dismantling of a power plant requires very long timeframe. We simply cannot get out of nuclear power with a snap of the fingers, because even getting out of nuclear power requires us to manage it for decades, and manage its waste for millennia.

What this technology, its waste and its disasters teach us is that in order to accept them we have to think of our way of life as eternal. Nuclear power requires us to think that all this, all this infinite management, will continue without problem, forever. Nuclear power supposes the infinity of the world, the continuity of our history in the same way. It presupposes and manufactures it: we are forced to continue the history of nuclear power, which we inherit. There is truly a production of historicity inscribed at the heart of today's nuclear power.

The Fukushima disaster occurred in a world that could not be said to be intact. The catastrophe adds disaster to a situation that was problematic, and also reveals it. This is what I proposed to call, with Félix Guattari, devastation. There is indeed a catastrophe, a major new event, but it takes place in a world that is already partly devastated, and that makes this catastrophe possible. Guattari, in the three ecologies, proposed to think of all ecological problems as always coming under three "domains" that he called mental, socius and natural. These three domains are not independent, but are jointly produced, coproduced, and are linked together. To think that we live in a devastated world is to think from the point of view that our ways of being together and our collective forms of intelligence (socius), our material situation (nature) and our ways of thinking and feeling (mental) are already impoverished, destroyed by our individualistic, capitalist, productivist, etc. world. This devastation is integrated in the depths of our thoughts (what Guattari called IWC, Integrated World Capitalism).

To think of Fukushima from the point of view of this triple devastation is to think that nothing in this situation is normal, and that Fukushima adds insoluble problems, poses questions that we are not obliged to answer. These are "infernal alternatives",[22] which force us to choose between evils that we do not want.

For example, nuclear energy will be described as "green" because it does not emit CO2 and therefore does not contribute to global warming. We will be presented with a fabricated alternative between the risk of a nuclear disaster and its waste or global warming. But this alternative is only valid if we consider that the need to

[22] Isabelle Stengers et Philippe Pignarre, *Capitalist sorcery: breaking the spell.* (Palgrave, 2011).

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consume so much energy is "normal", when there is nothing obvious about it. To rethink the energy question properly, we would have to question all the post-war choices, land use planning, modes of transport, delocalized production methods, individual consumption, etc. To really think that we should do without nuclear power and also without fossil fuels requires a real change in our way of living and thinking. Replacing petrol or diesel cars with electric cars fueled by nuclear power, coal or shale gas will not change this disastrous situation, and will push us further into a world of catastrophes. If we do not start from this need to radically change what makes up our world, our ways of living and being together, our habits of life and our conception of what is normal, then nothing will change and the disasters to come will be the heirs of Fukushima.

The disasters of 11 March and Fukushima are also disasters of "consistency", because they shake up the relationships in our world. All the relationships between food, the order of our fears, our way of life, the soil and our ideas are transformed. This shows that there are no more natural disasters,[23] because technology, nature and society are intimately linked and that without the construction of power stations, but also of cities, by the sea, the tsunami would have nothing to devastate. But Fukushima, if we take note of this interconnection, also requires us to think of these interconnections as what makes disasters possible, and even more terrible.

Beyond these lifestyle elements, I think that Guattari's proposal is that our conceptual tools are themselves the product of a situation of devastation. Guattari's proposition about the 'mental' is to think that our ways of framing problems, of conceiving or conceptualising them, are also problematic. To think of a world of general equivalence, where individuals are "anyones", freely movable, where places are uneventful, unmediated, and expendable, where financial compensation becomes normal, where the very notion of nuclear catastrophe becomes a probability like any other, and where talk of attachments to a milieu is so difficult, so quickly brushed aside, is already to live in a situation where thinking is devastated. The world that requires all this is a toxic machine.

Reinventing

[23] Nancy, *After Fukushima*.

For me, it is certainly the post-Fukushima rebels[24] and their attempts to reinvent new possibilities who gave me hope. Numerous groups were created, sharing a common revolt against nuclear energy and its world. It is pointless to try to give an exhaustive account of these struggles. Not all the groups fought with the same intensity, to do the same things, or to denounce the same problems. But these groups have been forced to face the very intricacy of the world, forced to share knowledge, know-how and expertise, but also to connect very diverse problems. Much has been said about the "amateur revolt" movement (Shirōto no Ran), an activist network that started out in a second-hand sales district and immediately placed the issue of mass consumerism and the infinite production of objects at the heart of the nuclear issue. Similarly, the network of Freeters, young people without permanent jobs, have taken over the front line of social struggles and disposable work, a type of precarious employment that is now found in the dismantling of the plant (nearly 5,000 people work there every day), or the groups of Fukushima mothers,[25] who have put the question of survival and the lives that nuclear power offers to children at the forefront of their struggles. The citizens' groups that have taken up Geiger counters, mapping polluted living areas, have reinvented what the term 'citizen science' means, while connecting with researchers around the world and producing accurate and useful knowledge. And let's not forget all those who invented new forms of protest, protesting against the state machine for almost ten consecutive years. All these groups and activists network did not accept the role assigned to citizens, still considered by our managers as part of the problem. They invented an active way of being part of the solution to the ecological problem called Fukushima.

So, certainly, the nuclear situation in Japan and in the world continues to be problematic, and our ecological situation remains a global catastrophe. But it seems to me that we should consider these citizen movements as new modes or new ways of giving importance to things, to others, to objects. They have succeeded in doing what Guattari called for: pluralizing the modes of valorization, which today are all reduced to a single mode. It is a question of creating importance, of zones of what can count for a group or an individual, of knowing how to recognize and state: "Here, this is important". It is not a question of waving around ready-made and already established values, nor of getting out of any idea of valorization as such, but of producing new modes of existence, in order to recognize that plural values can be created, can be

[24] Sabu Kohso, *Radiation and revolution* (Duke University Press, 2020).
[25] Aya Hirata Kimura, *Radiation brain moms and citizen scientists: The gender politics of food contamination after Fukushima* (Duke University Press, 2016).

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claimed and can also matter for others. Guattari called these plural "Universes of values", each functioning with their own logic. These Universes are therefore also "*sensitive, cognitive, affective, aesthetic, etc.*",[26] because in any sensitivity, in any affect, some components matter, others less. Any Universe is therefore a virtual process of valorization, which is potentially capable of making things count, of importing other than generalized equivalence. To think about ecology after Fukushima is also to think about the articulations of these modes of importance with social, mental and ecological struggles.[27]

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[26] Felix Guattari et Dr Andrew Goffey, *Schizoanalytic Cartographies* (London ; New York: Bloomsbury Academic USA, 2012).

[27] Sophie Houdart showed the extent to which this new situation required other sensibilities, even for researchers in the humanities working on this situation. See Sophie Houdart, « Les répertoires subtils d'un terrain contaminé », *Techniques & Culture. Revue semestrielle d'anthropologie des techniques*, nº 68 (18 décembre 2017): 88–103, https://doi.org/10.4000/tc.8567.

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"The darkened world"
After Auschwitz and Hiroshima's Catastrophes, according to G. Anders and T. W. Adorno

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The world has darkened. Our eyes have become blurred.

The world has darkened once before, and then more times since. Already in Auschwitz and in other European Jewish extermination sites. But, when an extreme glare burnished the skies above and burned the earth below in the cities of Hiroshima and Nagasaki on the 6th and 9th of August 1945, then something unprecedented and unheard of happened: we entered into the "atomic age".

After that, to the "after Auschwitz" the "after Hiroshima" was added. "After Auschwitz and Hiroshima", it was said, thus coining an indissoluble pair, bound to be thought, to be interpreted in its entirety by many philosophers, or distinguishing the two disasters that bear the names of those places. There was one, Theodor W. Adorno, who dwelled much on the first, on the "after Auschwitz" and on the new categorical imperative of "Auschwitz never again", without however neglecting to deal with the atomic bomb, and there was another, Günther Anders, who instead devoted his whole speculation and even his whole life to thinking especially "after Hiroshima" and to warning, in practice as in theory, "Hiroshima never again", without however forgetting to make his own "descent into Hades"[1] and to meditate on Auschwitz. And it is exactly on these two authors, "morally sensitive in immoral times",[2] that I wish

[1] G. ANDERS, *Besuch im Hades. Auschwitz und Breslau*, C. H. Beck, München, 1979. In addition to the texts by the author mentioned below, the following are also to be mentioned: *Die Antiquiertheit des Menschen. Band I*: *Über die Seele im Zeitalter der zweiten industriellen Revolution*, C. H. Beck, München, 1956, particularly the fourth part "Uber die Bombe und die Wurzeln unserer Apokalypse-Blindheit" and Id., *Die Antiquiertheit des Menschen. Band II: Über die Zerstörung des Lebens im Zeitalter der dritten industriellen Revolutio*n, C. H. Beck, München, 1980. As critical literature, refer to the most recent volumes: Babette Babich, *Günther Anders' Philosophy of Technology*, Bloomsbury Academic, 2022; on Nuclear Power, see the collective volume, directed by O. Ombrosi, *Il nucleare. Una questione scientifica e filosofica dal 1945 a oggi/Nuclear Power. A scientific and Philosophical Issue from 1945 to today*, Mimesis, Milan, 2020.

[2] Cfr. S. MÜLLER-DOOHM, *Adorno. Eine Biographie*, Suhrkamp Verlag, Frankfurt am Main, 2003 and D. CLAUSSEN, *Theodor W. Adorno. Ein letztes Genie*, Fischer Verlag, Frankfurt am Maim, 2003.

to dwell in the following pages. Without delaying by investigating their personal ties, seemingly not so friendly,[3] I would like to consider the essential points of how they considered, albeit in very different ways, the catastrophes that have settled in the heart of 20th century Europe, how they evaluated the possibilities of assessing their causes and consequences, chasing to the most hidden corners of that defeat, of that critical situation of the world that brought men not only to auto-alienation but also to auto-destruction. There is the same shade of color in their writings, the same "darkness", if we can say so, in their thoughts, a darkness that, however, never gives in to resignation. On the contrary, their call is addressed to all people, especially to young people in a nearly pedagogic way: a call for *resistance* and for a "never again". It is exactly for this lucid resistance of theirs, made of awareness and of critical aptitude towards what happened and what can still happen, that it seems to me, today, necessary to re-read them and to recollect some of the fundamental stages of their reflections.

The world darkened and our eyes were blinded by grief, by the "blind mourning",[4] according to an intense expression of Anders, by the monstrosity and the enormity of facts, by the incredulity of the boundless, by the anguish of the future, blinded by the incineration and the explosion that were made to happen. But there is another darkness Anders also deals with, one that concerns our present and our relation with the world of technology in the "atomic age", the age which we have entered with that "after" and in which many of us have always been. He writes in his open letter to Adolf Eichmann's son (1964) entitled as seriously as it is provocatively *We, the sons of Eichmann*:

> Although our world is made by man and is kept in motion by us all, because of the fact that it escapes our imagination and our perception, it becomes darker

[3] Cfr. G. ANDERS, *Günther Anders antwortet*, Tiamat, Berlin, 1987, pp. 88 et sq., French version by C. DAVID, « Contre un nouveau et définitif Nagasaki », in *Théorie Critique de la crise. Du crépuscule de la pensée à la catastrophe*, *Revue Illusio*, Le bord de l'eau, n° 12/13, Caen, 2014, pp. 479–484. It is the speech Anders delivered when he received the Adorno Prize in 1983. About the relationship between the two and more generally between him and the other members of the Frankfurt School refer also to the essay by C. DAVID, "Günther Anders, un "outsider" de la Théorie critique", in *Théorie Critique de la crise*, *op. cit*., pp. 487–505.

[4] G. ANDERS, *Die Toten. Rede über die drei Weltkriege* [1966], in id., *Hiroshima ist überall*, C. H. Beck, München, 1995, p. 363. Since there are no English versions of Anders' works, from here on out the philosopher's quotations will be translated by the authoress of the article.

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> day by day. So dark that we can no longer even notice its darkening, so dark, that we will even have reason to call our time a "dark age".[5]

In other words, the optimistic hopes of the 19th century, implicit in the idea of progress and the resulting development that aimed to reach a condition of greater "clarity", of wellness and safety for man, have instead shorted out the circuit, catapulting men into an age in which the higher the speed of progress and the greater the effects of its productions, the more defective human imagination and perception: the desired clarity diminishes, and their eyes become more and more "blind".[6]

The world has also darkened because of technology, because it has been able to transform the "magnificent" into the "monstrous", even in those years when the creation of its products went hand in hand with their destruction, when, more specifically, the production of cadavers proceeded just as fast as their annihilation, when the intensification and sophistication of weapons of war produced other dead, not the dead of war, but the civil dead of nuclear death.

So, the world darkened. Then. But maybe we should try to think, even imagine, that it continues still today to darken because of the same threat that looms: "it has not turned into evening yet", wrote Anders.

> But it is already too late to question the fact that we are moving towards this "evening" or more precisely towards the twilight of mechanical totalitarianism and that even now we are in its gravitational field and that these affirmations on the future *become* truer each day.[7]

He alludes to nuclear weapons and to that de-responsibilization of mechanical acts into the work of those employed in the production of those weapons (and not just of those), which is very similar to the de-responsibilization that made Eichmann a "banal" criminal. And nearly in the same way, Adorno introduced, with crepuscular tones, his reader to the "sad science" of the fragments contained in his book *Minima moralia* (1951), dwelling on the discrepancy between production and consumption of mass-produced goods and on their incidence on the destiny of real-life, when he wrote : "the change in the relations of production themselves depends largely on what takes place

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[5] G. ANDERS, *Wir Eichmannsöhne. Offener Brief an Klaus Eichmann* [1964], C. H. Beck, München, 2022, pp. 25–26.
[6] *Ibid*., p. 26.
[7] *Ibid*., p. 57.

in the 'sphere of consumption', the mere reflection of production and the caricature of true life";[8] and a few lines below he added:

> In the period of his decay, the individual's experience of himself and what he encounters contributes once more to knowledge, which he had merely obscured as long as he continued unshaken to construe himself positively as the dominant category. In face of the totalitarian unison with which the eradication of difference is proclaimed as a purpose in itself, even part of the social force of liberation may have temporarily withdrawn to the individual sphere. If critical theory lingers there, it is not only with a bad conscience.[9]

"In the period of his [of the individual's] decay", "totalitarian unison" gripped tightly onto the mechanisms of production and technical seriality that even out all differences: in those lines, Adorno writes of an inversion between means and ends, just as Anders speaks of "mechanical totalitarianism", of the totalitarian power of machines, that exceed the same capacities of those who produced them, that is, the "Promethean shame",[10] of the levelling of acting, of the inability to imagine their own potentialities and responsibilities; Adorno, like Anders, talks of the inversion between means and ends, since, for human beings, means have become ends in themselves. All this is, long since, since then, since at least the 50s and the 60s during which these authors wrote, more or less well-known. But the evening, that evening that Anders talks about in the passage above, as well as that obscurity that captures my eyes in this reflection, are now, *today*, at a well-advanced stage.

Now, despite this obscurity of the world and the blindness in which human being seems to have fallen, and just because of the latter, in the two philosophers, as well as in those who are re-reading and interrogating them here, a strong desire for clarity and intelligibility persists, especially on questions of moral philosophy. Whether it is *minima moralia*, according to the Adornian expression, or *maxima moralia*,[11] according to the expression used by Anders with obvious reference to the

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[8] T. W. ADORNO, *Minima Moralia. Reflections on a damaged life* (E.G.F. Jephcot, trans.), Verso, London, 2005, p. 15.
[9] *Ibid*., p. 17–18
[10] "Promethean shame" is the title of the first part of G. ANDERS, *Die Antiquiertheit des Menschen. Band I*.
[11] G. ANDERS, *Nach "Holocaust"*[1979], in *Besuch in Hades*, C.H. Beck, München, 1996, p. 216: "The things I have written are strictly linked with the questions treated in my book *Endzeit und Zeitenende*. The chapters dedicated to Hiroshima and Auschwitz, which dealt

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former, with Auschwitz and Hiroshima, and within the epochal turning point of human decay that followed, the reference to morality was necessary, and continues to be so, precisely because, with those disasters, we witnessed the two "greatest moral scandals" of the 20th century. Thus, facing these scandals, all other theoretical priorities, all other philosophical interests, the great dialectical and ontological questions—not only do these not matter, but they have become blurred and may vanish. On the other hand, political questions remain urgent and alive, and, especially concerning nuclear power, some juridical-institutional solutions still need to be conceived, despite the permanent struggle for disarmament in which Anders was involved for many years, as suggested in his *Diary from Hiroshima and Nagasaki* (1959): the progressive limitation of national sovereignty still needs to be considered, effecting the final goal of the creation of an universal state.[12] So, what is above all necessary and urgent for them both, is exactly a new moral code that concerns all human beings and even those who are not yet born, and that precisely because "all existing moral and religious philosophies have proved obsolete, they blew up with Hiroshima and were gassed with Auschwitz. We are at year zero of the new ethics",[13] as Anders writes. Precisely because of this failure of "all moral and religious philosophies", it is necessary and pressing to reformulate some moral codes, as Anders attempted to do, sharing this aim with men and women from all over the world gathered in Tokyo in 1958 for the World Conference against Atomic and Hydrogen Bombs and for Disarmament, of which he gives us such a clear and strong account in his Japanese diary. The title of this moral code is therefore "the new moral obligations in the atomic age", and its contents are radically new: since humanity confronts itself, for the first time, with the possibility of its own annihilation due to the exploding of the two bombs, ethics needs to be rethought "afresh" in order to lead humanity into a new era. A new code is therefore necessary, one constituted even, as someone criticised the philosopher, "by laws without force of law", which, however, would have the peculiarity of being no longer promulgated from "above" and then applied "below" but, on the contrary, of being thought from "below" and applied "above", where the "below" itself would also be the main authority. In other words, the respect for the new code should be demanded first from those who control the nuclear power on the forefront. Nevertheless, its radicality would not lie so much here—that is, in the reverse direction of the

with the two major moral scandals and with our task today, should be titled as MAXIMA MORALIA".

[12] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, in id., *Hiroshima ist überall*, *op. cit.*, pp. 51–52.

[13] G. ANDERS, *Nach "Holocaust"*, *op.cit*., p. 195.

prescriptibility of the new code of ethics of the atomic era (no more from the top down, but from the bottom up)—rather, the most subversive element of Ander's proposal would be in, so to speak, the keeping of a moral posture: "the task of moral is exactly to discredit and *dissolve the immorality which holds power illegally. The voice of morality, when legality is immoral, is the voice of resistance*".[14] So, Anders considers the necessity of a new code of ethics, new not only in its contents, as we will see soon, but, first of all, new in its form, which is to say, in the safeguarding of the morality already implicit in the *resistance* that faces the immorality that is very often combined with political power. Consequently, *resistance* against immorality in general, and against political immorality in particular, could be recognised as the first moral attitude.

As perhaps many already know, Adorno equally feels the need for a radically new ethics, and, in his *Negative Dialectics* (1966), he formulates a new categorical imperative valid exactly in the "after Auschwitz": "a new categorical imperative has been imposed by Hitler upon unfree mankind: to arrange their thoughts and actions so that Auschwitz will not repeat itself, so that nothing similar will happen".[15] He then adds a crucial point, very close to the "contents" of Ander's ethics, because, as we will show, the body element plays a decisive role:

> Dealing discursively with it would be an outrage, for the new imperative gives us a bodily sensation of the moral addendum—bodily, because it is now the practical abhorrence of the unbearable physical agony to which individuals are exposed…It is in the unvarnished materialistic motive only that morality survives.[16]

Therefore, radically different morals are necessary in Adorno's opinion too. But before getting to this content more specifically, and thus before arriving at the heart of this analysis, it is important to note that, also for the philosopher of Frankfurt, the first moral posture, and even the first philosophical aptitude of a philosophy of the "after", is, as in Anders's opinion, *resistance*, meant as critical lucidity. In fact, he writes clearly that "the power of this resistance is the only criterion of philosophy

[14] *Ibid*., p. 35. (italics mine).
[15] T. W. ADORNO, *Negative Dialectics*, (E.B. Ashton, trans.), Continuum, New York, 1973, p. 365.
[16] *Ibid*.

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today".[17] In other words, philosophy can still make sense and be useful for human beings, at least by making them aware as objectively as possible of themselves, of what happened, of what happened to other people and, albeit indirectly, to them too, of what could still happen; and it can even allow them to gain leeway in reality, even if only in the contraposition to current forces, in the opposition to what never seems to change—in short, in the resistance that does not come to terms with barbarity, even if its range would be minimal or minimalistic. Adorno writes in a memorable lesson of 1965:

> Philosophy seems to me to represent the only chance, within the boundaries of this departmentalized world, of making good *at least* a part of what, as I have tried to explain to you, is otherwise denied. If one is not oneself capable at each moment of identification with the victims, and of alert awareness and remembrance, philosophy, in the necessary forms of its own reification, is perhaps the only form of consciousness which, by seeing through these matters and making them conscious in a more objective form, can *at least* do *something*, a small part of that which we are unable to do.[18]

Therefore, philosophical reflection is necessary as *resistance*, and it would act, in Adorno's opinion, at least in this "*at least*". Certainly, someone might observe that the resistance of which Anders speaks is mainly active in the moral-political field and is to be understood as resistance against immorality above all, whereas the resistance of which Adorno speaks is strictly philosophical and, I would go so far as to say, related to the end of metaphysics; equally, a distinction must be made between, on the one hand, the minimal, not to say minimalistic, philosophical gaze of the latter concerning the force of the ability for action implicit within resistance and of the *parva* possibility implied in the expression *at least* which he uses and, on the other, Anders's maximum philosophical gaze aimed at the highest issues and at the immeasurableness of the alternative between nuclear disarmament and the annihilation of humanity as a whole. It is as if the one, Adorno, were more rapt by the *microscopic*, while the other, Anders, by the *macroscopic*, in their common search for lucidity or clarity into the heart of darkness, and in their resistance as well, whether "kept small" or "made big".

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[17] T.W. ADORNO, *Wozu noch Philosophie*, in *Eingriffe. Neun kritische Modelle*, Suhrkamp, Frankfurt am Main 1977, cit. p. 471: "Die Kraft solchen Widerstandes ist das einzige Maß von Philosophie heute".

[18] T. W. ADORNO, *Metaphysics. Concept and problems* (E. Jephcott, trans.), Stanford University Press, Stanford, 2001, p. 124.

Moreover, if Adorno conceives of the philosophy of the "after", after the world darkened, as a philosophy of resistance, a philosophy that resists prejudices, lies, and, above all, the ancient certainties and absolutes, a similar proposition and idea remain true also for Anders. In a passage deserving of greater commentary, which deals with the debt that the Viennese philosopher has with his Jewish roots, he writes as follows with his prose, paroxytone and incandescent at the same time:

> Now I know what my root is. Its formula is: "You shall not make unto you any image." It is that which feeds all my passions. As "philosopher", my activity consists only in obeying this precept, in the struggle against all absolutes built by man: that is to say, in the iconoclasm.[19]

However, if resistance is the first moral posture, and even the main philosophical posture after the darkness that Auschwitz and Hiroshima imposed on the world, what exactly should we resist?

One should—but maybe it's better to speak personally, so *I*, *we* should—resist the hypnosis, the illusion, the lie, the blindness, namely the blind and reified consciousness of mass society, of consumption, of products and of these as ends; resist, moreover, the docile acceptance facing all that happens as if it were part of the natural course of things, resist that form of consciousness that, as Adorno says in a Benjaminian sort of way, "adapts itself to the world as it is, which obeys the principle of inertia. And this principle of inertia truly is what is radically evil";[20] and, finally, resist the idea that everything is already accomplished, and therefore, in philosophy as in life, resist the idea of having to "copy" the world and of having to mirror what exists, all in order to, instead, face the *ultimate*, or even the "absolutely unthinkable".[21] In short, as both these philosophers suggest, we should be able to conceive the "absolutely unthinkable" just because it was conceived and even realised. Anders writes, "The moral premise of truth is, today, the imagination",[22] and, according to the warning of an even more explicit formulation written in a letter of 1959 addressed to Claude Eatherly, the pilot who gave the order to drop the bomb on Hiroshima:

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[19] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, *op. cit.*, p. 125.
[20] T. W. ADORNO, *Metaphysics. Concept and problems*, *op. cit.*, p. 115.
[21] *Ibid*.
[22] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, *op. cit.*, p. 63.

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> You should strive to widen the scope limited to your imagination (and that even narrower of the feeling), so that feeling and imagination come to learn and conceive the enormity that you have already been able to produce; so that you could accept or reject what you have understood. In short, your task is that to widen your *moral imagination*.[23]

"Moral imagination": there is much to say, to think, even to invent, about this expression, this idea, which is absolutely unprecedented in the field of moral philosophy—unprecedented because on imagination or fancy are founded no more eventual aesthetical categories, but exactly the premises of a new ethic capable of observing the happening, of approaching it and able, above all, to imagine the enormity of what could still happen. The imagination and its dilatation are not so much a *divertissement* as they are an ethical task, whose achievement is not up to the pilot of Hiroshima merely as a means to clear his conscience, but up to each man and woman because it would allow them to imagine the enormity of what happened and the immeasurableness of what still threatens. Therefore, for Anders, stigmatised rightly or wrongly by his critics as "the philosopher of desperation", widening the spheres of feeling and imagination is the first step of the new code of ethics in the age of the darkened world, one world "after Auschwitz and Hiroshima". In other words, alongside a resistance that is, as we were saying, the first moral posture *in form*, and even the first philosophical attitude, suddenly imagination and feeling arise as the very first, almost primordial, elements of the *content* of a new ethical code. Even before the "commandments of the atomic era", which Anders also enumerates in several of his books, circumscribed from six to ten points, imagination and feeling arise, at the beginning of this new era, as the possible "instruments" or, better yet, "foundations" —but in quotation marks, since the word 'foundation' is already too compromised— of the new ethics.

Having however to abandon the just approached shores of imagination and fancy, I head, in this little search into the obscure, towards feeling, because this, and not the others, is at the basis of the new Adornian morality and is the fulcrum of its categorical imperative. There are several similarities between the two philosophers, those already detected certainly, but many other *leitmotivs* revolve precisely around feelings: for example, the feeling of being survivors, not only in relation to the past

[23] G. ANDERS, *Off limits für das Gewissen. Der Briefwechsel zwischen dem Hiroshima-Piloten Claude Eatherly und Günther Anders* [1961], in id., *Hiroshima ist überall*, C. H. Beck, München, 1995, pp. 219–220.

and to what happened, but also in relation to what will happen in the future, the feeling of being or having been survivors in the future, we could say; moreover, the feeling of respect and reserve—I would say absolute, sacral, if these terms were still appropriate—towards the dead. The dead, the dead of Auschwitz and Hiroshima, of "the millions that have been annihilated for nothing – and then again for nothing",[24] inhabit the pages of their writings. But the feeling that these dead arouse in the two philosophers is different: in Anders shame rules, the shame of "being men"[25] and of having allowed so much, in short, the shame as the expression of the refusal and, at the same time, of the sharing of those responsibilities that led to devastation and would lead to the apocalypse; in Adorno, there is more a looming feeling of guilt, the fault of having the vital breath that another no longer has, mixed with self-preservation instinct—already guilty—as what impedes each reconciliation with life. According to Adorno, it is not at all wrong to wonder "whether after Auschwitz you can go on living".[26] In him, this sense of guilt is characterized even as a nightmare "of a man killed twenty years earlier".[27] In his words, "the guilt of a life which purely as a fact will strangle other life, according to statistics that eke out an overwhelming number of killed with a minimal number of rescued…is irreconcilable with living. And the guilt does not cease to reproduce itself, because not for an instant can it be made fully, presently conscious".[28] This sense of guilt, which can be neither constant nor constantly present to conscience—and which, for that reason, also increases the fault—is nevertheless, once again, what obligates Adorno and what would obligate others to philosophize. It is the feeling of guilt, united with the feeling of un-reconciliation and also that of anger, of abhorrence, which is the motor of a philosophy and an ethics of the "after", of a philosophy and an ethic certainly proved by the events, but above all upset by the fact that these same events incite both philosophy and ethics to look deeper and deeper into the monstrous, the unconceivable and what is "down-to-earth".

But there is something more. The feeling, actually and more precisely, a certain physical reaction associated with the feeling of abhorrence or revolt, comes to

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[24] G. ANDERS, *Die Toten. Rede über die drei Weltkriege*, in id., *Hiroshima ist überall*, C. H. Beck, München, 1995, p. 363.

[25] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, *op. cit.*, p. 9.

[26] T. W. ADORNO, *Negative Dialectics*, *op. cit.*, p. 363. With regard to the possibility/impossibility of living "after Auschwitz", refer also to the already mentioned seminaries of 1965 collected in id., *Metaphysics*.

[27] *Ibid.*

[28] *Ibid.*, p. 364.

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found in some way the new ethics, both in Anders and in Adorno. In Adorno it is clear when, in relation to the categorical imperative, he explains:

> For the new imperative gives us a bodily sensation of the moral addendum—bodily, because it is now the practical abhorrence of the unbearable physical agony to which individuals are exposed even with individuality about to vanish as a form of mental reflection.[29]

Bodily, therefore, because our reaction—the abhorrence becomes "practical"—facing the "unbearable physical agony" of those we have not known, facing the outrage that their bodies suffered, is bodily, belongs to our way of feeling, to the feeling of our body. In other words, in the categorical imperative of Adorno the force of the "not" and of the "never", of the "never again", is conveyed by our "practical abhorrence" and the "unbearable physical agony" the victims suffered and to which by now everyone has been exposed. In short, physical agony is the basis of the imperative; our abhorrence is the answer to this foundation, and it becomes the "foundation" of ethics. In fact, this physical abhorrence, or this feeling of the unbearable, or again this physical aversion that we feel with regard to the extreme suffering of and insult against those dead, is not only the result of the fear of being potentially exposed to a similar torment, namely another expression of self-preservation and the identification process; nor is it the simple expression of a foolish refusal of the common human destiny—and of the "living"—in the experience of suffering. That feeling of abhorrence is not generated from sufferance/suffering in general, but arises, inasmuch as it is a repulsion particularly toward the suffering and insult born by bodies during the mass extermination. So, what Adorno seems to be saying is that this aversion, which our own body feels with regard to the destruction of the "stacked" bodies in Auschwitz, is an acknowledgement of individuality, of those singularities violated, and violated even into their corporeality. And if it is true that individuality is more than integrity and physical specificity/singularity, it is also true that it is *at least* physical integrity. Therefore, the physical abhorrence we feel in this "after" that never ends, becomes an acknowledgement *at least* of the other's individuality and physical singularity. And in that, it is maximally, that is to say minimally, moral.

In Anders, it is equally in the feeling of abhorrence and in the physical reaction that a *rest* nestles, a *minimum* of morality. Whether it is the feeling of the "throat

[29] *Ibid*., p. 365

tightly closed"[30] upon seeing the image of a desolated and desertified land in the atomic nothing or the feeling disgust for the unbearable view of the remains of the gas chambers, the sphere of morality seems to move exactly in this strange hybrid of physical reaction and feeling/emotion. In reference to an account by Adolf Eichmann on the sense of nausea due to the blood of the mass murdered that poured out, Anders, writing to Eichmann's son, said:

> It is difficult to judge which is the most terrible thing: maybe it is the event that he reports, or his reaction or the fact that the stomach has become the last asylum of civilization and *pity*, that bestiality and morality have exchanged places. The conclusion we reach is that he had to do everything in order to contrast the danger of *a physiological irruption of morality* in the implementation of his project.[31]

"*A physiological irruption of morality*", I underline this expression by Anders just as I underlined Adorno's "*practical abhorrence*". In these bodily reactions, in the throat or the stomach, associated with the feeling of abhorrence, of revolt or whatever you want to call it—which perhaps we should begin to decipher and name—there is a *minimum* trace of morality. Anders reports, and it is important to mention this here, that at the Nagasaki Museum, he could see the monstrous enclosed into showcases, and what provoked in him this feeling of indignation, of anger and even of escape, was accompanied, however, by the need to understand: a man's hand melted with a beer bottle, a false bottom-helmet, constituted precisely by the helmet and by the skullcap melted together by the "flash", and, above all, a shadow, only a shadow, imprinted on the wall, of which he writes: "what do you see on the wall? It is true. There is something. A profile, a shadow. The shadow of a man.…Peter Schlemihl's shadow. A depersonalised shadow. Become autonomous. A shadow becomes eternal".[32] A sensation of opposition, a "Stop!" arising from such an inexpressible object, monstrous, unimaginable, a shadow without man and made intelligible only by the caption of the showcase:

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[30] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, *op. cit.*, p. 79.
[31] G. ANDERS, *Wir Eichmannsöhne. Offener Brief an Klaus Eichmann*, *op. cit.*, p. 39.
[32] G. ANDERS, *Der Mann auf der Brücke. Tagebuch aus Hiroshima und Nagasaki*, *op. cit.*, p. 131.

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> On the morning of the 9th a man leaned against the wall without suspecting anything. In that moment the thunder broke out. And in a while the wall was a burning surface, and the man reduced to ashes. But the area of the wall covered and protected by the man in the last split second of his existence did not burn. That piece of wall was *fixed*, like in a picture taken with a magnesium flash. As in a negative. For it is the only trace remaining of his days and the only one destined to survive.[33]

Enough! I go no further in wanting to show what is hardly conceivable, but I shift the focus on Anders's reaction, which we can deduce from this account and to which, paradoxically, painfully, the philosopher himself appeals in the formulation of his new code of ethics: only thanks to this feeling of revolt and opposition, only thanks to this "stop!" and this "no!" is it possible to think of creating a new way of feeling and, consequently, a new way of thinking. In other words, if it is true that in feeling and in the feeling of revolt toward the unbearable, the *rest* of morality emerges, as we were saying earlier, it is also true that the inadequacy of our feeling is what allowed and would still allow the disaster. And if, moreover, we consider the fact that, in the atomic age, what we should hopefully react to becomes exactly boundless, then we can understand that "even our feeling inevitably jams", because the boundless, or the "too large", leave and left cold, unmoved. Therefore, the danger is increasingly serious, because, in Anders's words, we become "emotional illiterates" having to face immeasurableness: "six million remains a figure, while if we talk of ten murdered maybe something echoes inside of us somehow and just one murdered fills us with horror".[34] As for that shadow fixed on the wall. Now, precisely because of the fact that the inadequacy of our feeling makes the repetition of these very terrifying situations possible, it is necessary to build ever more, allow me this expression, this moral "muscle", which lies precisely in feeling or physical perception, and, at the same time and in this way, to stem ever more the coldness or this illiteracy of emotions. Adorno, for his part, also teaches, in the radio broadcast that has become a text titled *Education after Auschwitz*[35] (1966), that barbarity will continue to exist so long as the conditions that made that disaster possible continue to persist, and that the attempts to hinder the repetition—the "never again"—should be sought precisely in the direction

[33] *Ibid*.
[34] G. ANDERS, *Wir Eichmannsöhne. Offener Brief an Klaus Eichmann*, *op. cit.*, pp. 28–29.
[35] T. W. ADORNO, *Education after Auschwitz*, in id., *Can One live after Auchwitz. A philosophical reader*, ed. by R. Tiedeman, Stanford University Press, Stanford 2003, pp. 19–37.

of the culprits, going in the opposite direction to coldness and trying to develop their conscience at most.

Ethics would thus seem to inscribe itself into a physical and emotional reaction. For the morality of this bodily reaction, which concerns feelings, facing the monstrous, facing even the loss of bodily individuality—whether it is that of the piled and insulted corpses of Auschwitz or that of the dissolution of the bodies in the fusion of Hiroshima and Nagasaki—becomes the moment in which the other's body, that in which the other is body, made itself morally visible, even in a shadow, in that only shadow without man that Anders describes. Since all this is produced in the context of the "moral's eclipses" and in a world by now darkened, morality then survives *at least* in letting this bodily, physical, and emotional motive, prevail and be valid, the motive also called 'feeling' by the two philosophers, and in letting ourselves be materialized by this "materialistic motive": it is only "in the unvarnished materialistic motive"[36] that morality survives, as Adorno writes in *Negative Dialectics*. After the eclipse of morality, the eclipse of reason, after the world darkened and blurred our life as well as our sight, ethics can only survive by finding its "fragile foundation", its cracked and upset "foundation", in the materiality and fragility of the body. With Adorno, "the somatic, unmeaningful stratum of life is the stage of suffering, of the suffering which in the camps, without any consolation, burned every soothing feature out of the mind".[37] For the mind, with all its derivation, with its false products and its legislations, including those of all morals that in no way prevented those disasters, burned in the death-chamber or on the Japanese land, it is up to the body to become the material place of the "fragile foundation" of a new ethic that remains, however, as all scuppered pains, without consolation. An ethics that has nothing either reassuring or spiritual, a restless ethics, imposed during a state of subjugation and included in a state of emergency, an ethics that has no presumption of having anything to do with freedom. An ethics therefore "without consolation", as imposed by powerful people of history, "by Hitler" and by Truman, risen only in our physical and emotional response facing the horror and the unbearability of those monstrosities.

The world has been darkened. Our body has been shaken and will shake again. But *at least* that will keep us awake.

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[36] T. W. ADORNO, *Negative Dialectics*, *op. cit*., p. 365.
[37] *Ibid*.

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Nuclear Deterrence and the Metaphysics of Time

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I. Metaphysics of the prophecy of doom

1. Bergson and the possible

The next time an atomic bomb will be dropped over a civilian population, breaking what has been called the "nuclear taboo", it is very likely that the event will be interpreted as the bursting forth of the possible into the realm of impossibility, as was the case with the destruction of the twin towers. From now on, one heard it said, even the worst horrors have become possible. Note that if something *becomes* possible, presumably this is because it was not possible before. And yet, common sense objects, if it actually occurs, this must be because it *was* possible all along. Common sense proves here once more to be a detestable guide.

In *The Two Sources of Morality and Religion* (1918), French philosopher Henri Bergson described the sensations he felt on 4 August 1914 on learning of Germany's declaration of war on France:

> Horror-struck though I was, and though I felt a war, even a victorious war, to be a catastrophe, I experienced what William James expresses, a feeling of admiration for the smoothness of the transition from the abstract to the concrete: who would have thought that so terrible an eventuality could make its entrance into reality with so little disturbance? The impression of this facility was predominant above all else.[1]

Yet this disturbing familiarity stood in sharp contrast to Bergson's feelings *before* the catastrophe. The prospect of war appeared to him and his friends "as *at once probable and impossible:* a complex and contradictory idea that lasted right down to the present day".[2]

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[1] Henri Bergson, *The Two Sources of Morality and Religion,* trans. R. Ashley Audra and Cloudesley Brereton (Garden City, N.Y.: Doubleday, 1935), 159–60.
[2] Ibid., 159.

Some years later, Bergson managed very well to unravel this apparent contradiction in reflecting upon the nature of a work of art in an essay entitled "The Possible and the Real" (1930). "I believe in the end we shall consider it evident", Bergson wrote, "that the artist in executing his work *is creating the possible as well as the real*".[3] Why is it, then, he asked, that one might "hesitate to say the same thing for nature? Is not the world a work of art incomparably richer than that of the greatest artist?"[4] The hesitation to extend this idea to acts of destruction is greater still. And yet who has contemplated the images of 11 September and not been filled with a feeling of exaltation and dread that resembles what one feels in the presence of the sublime, in the sense that Burke and Kant gave to this word? Of the terrorists, who could hardly have failed to have sensations of the same kind, we may also say that they created the possible at the same time as they created the real. This was, as I say, the metaphysical view that most commentators spontaneously adopted.

The explanation of our inaction in the face of many looming disasters is to be found right here: anyone who wishes *to prevent* a catastrophe must believe in its possibility *before* it occurs. The paradox is that if one succeeds in actually preventing it, its non-realization keeps it firmly within the domain of the impossible, and efforts at prevention appear in retrospect to have been useless.[5]

3. Being a compatibilist

My starting point has been the age-old problem of the compatibility between determinism and free will in its modern version fleshed out by such philosophers as David K. Lewis and Robert Stalnaker[6].

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[3] Henri Bergson, "The Possible and the Real", in *The Creative Mind: An Introduction to Metaphysics,* trans. Mabelle L. Andison (New York: Philosophical Library, 1946), 121.

[4] Ibid.

[5] A semi-comical illustration: the YK2 efforts at preventing a universal computer collapse at the (false) turn of the century, a collapse that didn't take place, were deemed by many afterwards to have been a waste of resources.

[6] David K. Lewis, *On the Plurality of Worlds*, Oxford: Blackwell Publishers, 1986; Robert Stalnaker, *Ifs: Conditionals, Belief, Decision, Chance, and Time*, Dordrecht: D. Reidel, 1981.
As far as modalities are concerned let me recall that, given an adequate definition of a possible world, possible means that which is true in at least one possible world; necessary that which is true in all possible worlds; impossible that which is untrue in all possible worlds; and contingent that which is possible without being necessary.

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Lewis calls "soft determinism" "the doctrine that sometimes one freely does what one is predetermined to do; and that in such a case one is able to act otherwise though past history and the laws of nature determine that one will not act otherwise". He then defines compatibilism as "the doctrine that soft determinism may be true".[7]

Let us call C the state of the world at a time t_1. We have:

A1: C was the case at t_1

Consider a subject S whose action x at $t_2 > t_1$ is determined by the laws that govern his world according to:

A2: If C was the case at t_1, then S does x at t_2

From A1 and A2 we derive by modus ponens:

A3: S does x at t_2

Can x be a free although predetermined act? To defend soft determinism, it is always useful to start from the argument(s) put forward by those who deny it. The so-called "incompatibilist" thesis uses an operator ❑ which, applied to a proposition p, asserts that p is true in all possible worlds: it is necessary. More specific to our problem, we will call $❑^S_t$ the operator of necessity such that:
$❑^S_t$ (p) means: p is true and S is not free at t to perform an act such that, if he were to perform it, p would be false.

The incompatibilist argument can be written as follows:

N1: $❑^S_{t2}$ (C was the case at t_1)
N2: $❑^S_{t2}$ (If C was the case at t_1, then S does x at t_2)
Thus, by modus ponens[8],
N3: $❑^S_{t2}$ (S does x at t_2)

N1 expresses the principle of the fixity of the past. N2 says that the laws that determine the subject's actions remain the same in all possible worlds. The conclusion N3 states

[7] David K. Lewis, "Are We Free to Break the Laws?", *Theoria*, 47 (1981), p. 112.
[8] Whether modus ponens remains valid under the operator of necessity could be questioned.

that S does actually do x at t_2, but he does not act freely since it is not in his power to act otherwise.

Can this argument be refuted? Depending on the nature of the problem, there are two possibilities, neither of which has greater *a priori* legitimacy than the other.

a) We could accept N1, in which case we would have to reject N2. The past is fixed, and the subject, supposedly able to act otherwise, has the power to invalidate the fixity of the temporal chain which links C to x. The nature of this power must be made very clear. As Lewis puts it, we must distinguish between two versions:

Strong version: "I am able to break a law".
Weak version: "I am able to do something such that, if I did it, a law would be broken".[9]

Obviously, there is no way that *in our world* the subject could act so that the link between C and x would be violated: this would be contrary to hypothesis A2, which indeed remains valid. The strong version is eliminated but not the weak one. To paraphrase Lewis, the way in which I was determined not to do anything other than x "was not the sort of way that counts as inability".[10] The power that this sort of ability represents is called "counterfactual".

b) Conversely, we could accept N2, in which case we would have to reject N1. This time the temporal chain A2 is held to be fixed (that is, true in all possible worlds). To maintain that the agent's action, x, is free although determined by the past and the laws that govern the world, we have to grant the agent a power to invalidate the past. This power obviously cannot be causal. Here too we must distinguish between:

a *strong version*: "I am able to change the past," which is "utterly incredible", to use Lewis's terms, and a *weak one*: "I am able to do something such that, if I did it, the past would have been different from what it was in the actual world".

[9] "Are We Free to Break the Laws?", loc. cit., p. 113.
[10] Ibid., p. 112.

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The Calvinist theologian and analytic metaphysician Alvin Plantinga, who defends the weak version, has logically dubbed "counterfactual power over the past" this kind of ability.[11]

Although, as I said, the two ways of grounding compatibilism have an a priori equal legitimacy, contemporary philosophers such as David K. Lewis or Robert Stalnaker, probably because of their respective stints in the domain of rational choice theory, have focused almost exclusively on the former, which preserves the fixity of the past. I have explored thoroughly the second approach and been able to show that it formalizes elegantly the properties we have discovered as characterizing the prophecy of doom.

The first thing to be noted is that there exist situations in which the counterfactual power an agent possesses over the past causally prohibits him from acting in a certain way.[12] Let's consider a paradigmatic illustration which has been the object of numerous cogitations from Hobbes onward: the promise case.[13] At t_1 Mary asks Peter to lend her $1,000 and she promises to pay off her debt at $t_2 > t_1$. We are in a state of nature à la Hobbes: there are no state institutions, no judicial system, no rule of law. The agents are only guided by their self-interest. If the loan could take place, it would be mutually beneficial.

In the temporality that preserves the fixity of the past, it is immediate that the loan is impossible. Reasoning by backward induction we realize along with Peter that Mary at t_2 will break her promise. Peter would be a fool to lend her anything.

In the temporality that maintains N2, that is a necessary link between past conditions and future action, at the cost of doing away with the fixity of the past, things work very differently. Let's say Peter is an omniscient predictor capable of anticipating Mary's actions in all possible worlds. If Mary held her promise at t_2 Peter would anticipate it and the mutually beneficial loan would take place. On the other hand, if she were to renege on her promise, Peter would anticipate it as well and he wouldn't lend her the money. We see here in action the counterfactual power that Mary has on her past via her action. However, if the loan doesn't exist, Mary is not in a position to renege on her promise to pay off her debt. Hence a contradiction which

[11] Alvin Plantinga, "On Ockham's Way Out", *Faith and Philosophy*, 3, 1986.

[12] This paradox is akin to the so-called "grandfather paradox" that appears to be a consequence of the assumption of time travel. If I could travel to the past and kill my grandfather "I" couldn't be. The grandfather paradox relies unnecessarily on causal connections though, which is not the case of the implications of the counterfactual power over the past.

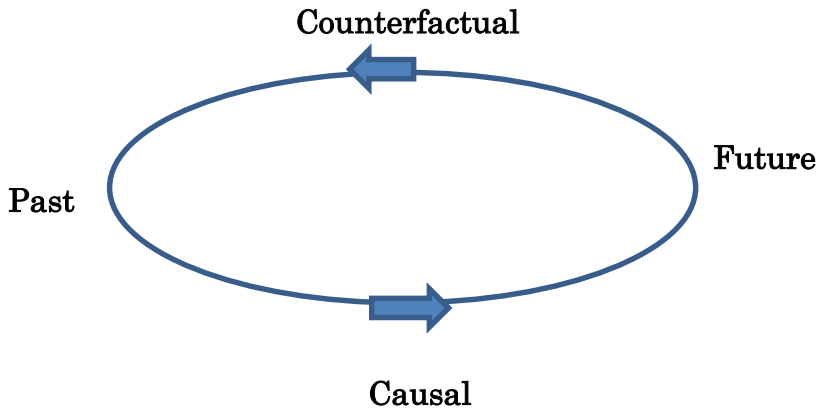
[13] Also known in game theory as the assurance game.

is immediately solved by the conclusion that Mary won't renege on her promise if the loan takes place. The loan will indeed take place to the mutual benefit of Peter and Mary.

This example illustrates that in the temporality we are examining it is not true that any future goes, since "it is not the future if you stop it".[14] The future must be such that the past that it counterfactually determines doesn't causally prevent its occurrence. In other words, the future, far from being the outcome of the laws of nature applied to determinate initial conditions (prediction) or something that we create according to our will ("prospective"[15]), is the solution (one of the solutions) to an equation in which the unknown x—he future action—appears on both sides of the equation in the following form:

$$x = F\,[x],$$

as if it were determining itself. According to the received terminology, we will say that the future appears as the *fixed point* of a certain operator F. The latter expresses the causal consequences of a past that is itself determined counterfactually by the future x. This can be represented graphically as follows:



[14] Quote from Philip K. Dick's tale, "Minority report", a beautiful and profound illustration of some of the ideas presented here.

[15] Reference to the method known in France as *Prospective*, elsewhere as the Scenario method, or, more vaguely, "futurology", invented by the French philosophers Gaston Berger and Bertrand de Jouvenel at the end of the 1950's. One of its current proponents, Michel Godet, wrote: "All who claim to foretell or forecast the future are inevitably liars, for the future is not written anywhere—it is still to be built". (Michel Godet, "Creating the future: the use and misuse of scenarios", *Long Range Planning*, 29, 2, 1996.)

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In this conception of time, the future is fixed, that is necessary, since it is linked to the past by N2, a proposition that states that this link is true in all possible worlds. However, this is only true once the past is determined, which presupposes that the future itself is determined. In other terms the future is necessary—it has always been necessary—but only once it has become actualized. This is the essential trait we have learned to ascribe to the metaphysics of the prophecy of doom.

4. On the multiplicity of metaphysics and the choice of the most pertinent

The indeterminacy of the past as long as action has not been performed along with the necessity of the future once action is taken serve to define a metaphysics of temporality which I have dubbed "Projected time". In what follows, in order to prepare the ground for my analysis of nuclear deterrence, I will introduce another metaphysics, which I name "Occurring time", the one that supports all strategic reasoning, be it carried out by an economist, a game theorist, a planner, an engineer, a designer or a military strategist. It corresponds to a very distinct conception of free will for which the agent's actions are driven by a set of beliefs and desires rather than "pushed" by a determinism. Named the belief-desire model, its most familiar graphic representation today is the decision tree. At every node of the tree an agent has the choice between several possible future options. When he chooses among them he holds the past as fixed, that is counterfactually independent of his choosing. Fixed past, open future, the metaphysics of occurring time is obviously in sharp contrast with that of projected time.

If metaphysics is the branch of philosophy that explores the fundamental nature of reality, according to a received definition, the question arises, how can we account for the plurality of metaphysics?

In the 4th Century BCE, a member of the Megarian School named Diodorus Kronos proposed an axiomatic, that is a set of propositions held to be self-evidently true, designed to show that the actual is the only possible and that the future is already determined.

The three axioms are:

1) Every true proposition about the past is necessary.
2) The impossible does not logically follow from the possible.
3) There is a possible which neither is presently true nor will be so.

Diodorus demonstrated that they are incompatible. One of them at least must go. Axiom 3 seems self-evident to most people today. However, if they hold like Diodorus that 1 and 2 too are self-evident, then they must deny 3. That is, they must hold that an event that happens neither in the present nor in the future is an impossible event.

One of the greatest French philosophers of the 20th century, Jules Vuillemin has written a history of western metaphysics on the simple basis of which axiom or axioms various philosophers decided to drop. This makes a fascinating story.[16]

The multiplicity of metaphysics finds its origin in Diodorus's theorem of incompatibility. A comparison comes to mind with the history of geometry. Once it was demonstrated fairly late in the history of mathematics that Euclides's fifth axiom, the so-called parallel axiom, couldn't be derived from the first four, it became conceivable to imagine a geometry in which this axiom wouldn't hold. The concept of a Riemannian manifold followed. And it proved extremely *useful*, as is well known, to Albert Einstein who was in the process of elaborating his theory of general relativity. French mathematician Henri Poincaré then asked: "Is Euclidian geometry true? This question is deprived of meaning altogether….A geometry cannot be truer than another; it is enough for it to be more convenient".[17] Likewise, let's not ask whether projected time is truer than occurring time, but if it is or not more useful than the latter. It all depends on the kind of problem we are facing. Let's note first that projected time and occurring time are two ways of skirting Diodorus's aporia. The former denies axioms 1 and 3, the latter endorses them both and therefore denies 2.[18] In my work on catastrophes[19]—including a nuclear conflict—I've shown that projected time avoids many paradoxes which occurring time, i.e., strategic thinking, comes up against when it comes to conceptualizing the temporality that separates us from a looming disaster the date of which is unknown. The second part of this paper will illustrate this point. Projected time defines an attitude that is neither complacency or voluntarism nor fatalism. Complacency stresses that the catastrophe although possible is not inevitable: the future is open. Fatalism makes it inevitable. By granting the agent

[16] The English version is more complete and a few errors have been corrected. See Jules Vuillemin, *Necessity or Contingency. The Master Argument*, CSLI Publications, Stanford University, 1996.
[17] Henri Poincaré, *La Science et l'hypothèse*, Paris, Flammarion, 1917.
[18] Hence the paradoxes of backward induction. See J.-P. Dupuy, "Philosophical Foundations of a New Concept of Equilibrium in the Social Sciences: Projected Equilibrium", *Philosophical Studies*, 100, 2000, p. 323–345.
[19] Jean-Pierre Dupuy, *Pour un catastrophisme éclairé*, Paris, Seuil, 2002.

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the counterfactual power to act upon the past conditions that determine him, projected time helps him navigate between the devil of catastrophism and the deep blue sea of dumb optimism.

For reasons already mentioned our Zeitgeist leans toward the latter. It is worth then reminding that the experience of projected time has accompanied humankind since time immemorial. It is intimately linked to the religious apprehension of the world. In all traditional societies, there are people called prophets (*nabis* in Ancient Israel) whose function is to interpret and convey the divinity's will. The prophets of the Bible, for instance, were extraordinary men, often great eccentrics and they did not go unnoticed by their neighbors. The influence their prophecies had on the world around them and on the course of events had purely human and social causes; but it was due also to the fact that those who heard them believed that the word of the prophet was the word of the Lord and that this word, which came to the prophet directly, from on high, had the power to bring about the very thing that it announced. We would say today that the word of the prophet had a *performative* power: in saying things, he brought them into being. However, the prophet was well aware of this. One might be tempted to conclude that the prophet had the power to which political revolutionaries aspire: he spoke so that things might change in the direction that he wished to impress upon them. But this would be to overlook the fatalistic aspect of prophecy, which reads out the names of all those things that will come to pass, just as they are written down on the great scroll of history, immutably, ineluctably.

Revolutionary prophecy, particularly in the form it came to acquire in Marxist doctrine, has preserved the highly paradoxical mixture of fatalism and voluntarism that characterizes biblical prophecy. German philosopher Hans Jonas said of dialectical materialism that it was "a most peculiar mixture of colossal responsibility for the future with deterministic release from responsibility".[20]

The metaphysics of projected time enables us to extend the notion of prophecy to our secular age and substitute for the obscure dialectic between voluntarism and fatalism a rigorous and non-paradoxical third way that is neither one nor the other. For the modern prophet, especially the prophet of doom, it is necessary to seek the fixed point of the loop between past and future, at which an expectation (on the part of the past with regard to the future) and a causal production (of the future by the past) coincide. The prophet, knowing that his public announcements are going to have a causal impact on the world, must take account of this fact if he wants the future to

[20] Hans Jonas, *The Imperative of Responsibility. In Search of an Ethics for the Technological Age*, University of Chicago Press, 1985, p. 113–14.

confirm what he foretold. The future is an x, that is a solution to an equation which says that the reactions to the past anticipations of x causally bring about x.[21]

In this sense, prophets are legion in our modern democratic societies, founded on science and technology. The experience of projected time is facilitated, encouraged, organized, not to say imposed by numerous features of our institutions. All around us, more or less authoritative voices are heard that proclaim what the more or less near future will be: the next day's traffic on the freeway, the result of the upcoming elections, the rates of inflation and growth for the coming year, the changing levels of greenhouse gases, etc. The *futurists* and sundry other prognosticators know full well, as do we, that this future they announce to us as if it were written in the stars is a future of our own making, even if it is in reaction to these very announcements. We do not rebel in general against what could pass for a metaphysical scandal. We have then the experience of projected time.

II. Metaphysics of Nuclear Deterrence

1. Caveat

I am writing these lines in April 2022, at a time when the prospect of a nuclear war between the US and Russia is deemed by many observers stronger than it has ever been. In a book published in 2015 and titled *My Journey at the Nuclear Brink*,[22] former Secretary of Defense William Perry wrote: "Today, the danger of some sort of a nuclear catastrophe is greater than it was during the Cold War, and most people are blissfully unaware of this danger".

The American film maker Errol Morris, in his movie *The Fog of War*,[23] asks Robert McNamara, the former Secretary of Defense of President Kennedy, what he thinks protected humanity from extinction during the Cold War, when the United States and the Soviet Union permanently threatened each other with mutual annihilation. Deterrence? Not at all, McNamara replies: "We lucked out". Twenty-

[21] Not any future goes. The prophet Jonah knew that if he prophesied the fall of Niniveh as God had asked him to do the Ninivites would repent and God would forgive them. He preferred to run away from God's gaze.
[22] Stanford University Press, 2015.
[23] Errol Morris, *The Fog of War*. *Eleven Lessons from the Life of Robert S. McNamara*, Sony Classics, 2003.

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five or thirty times during this period, he notes, mankind came within an inch of apocalypse. I will show that this response is self-contradictory. All those "near-hits" may have been the necessary condition for nuclear deterrence (ND) to work. To the extent that ND can be at times efficient, my objective is to show that everything occurs then *as if* the protagonists had immersed themselves in the peculiar logic of projected time.

Let me hasten to add that this is in no way meant to be a justification of nuclear deterrence in the MAD form. My conviction is that the latter is morally abhorrent. But there is a logic to it that can be discerned quite clearly.

My strategy will be as follows. In a first phase, I will expound the broad lines of the intellectual history of ND, following Steven P. Lee's excellent book, *Morality, Prudence, and Nuclear Weapons*.[24] There is not one argument put forward by the protagonists in that discussion that has not been questioned, disputed, challenged, refuted by some, defended by others, in an unending quest for reason and justice. I won't enter in those controversies and will be content with just reporting what the dominant arguments have been. My critical standpoint resides elsewhere, and I will expound it in a second moment. It consists in showing that confusions spoil the debate, and they stem from the fact that a good number of arguments belong to strategic reasoning and find their place within the metaphysics of occurring time while others, in general more recent, pertain to projected time and presuppose the renunciation of strategy. Two incompatible metaphysics of time clash invisibly.

2. A Brief History of Nuclear Deterrence Theory

For more than four decades during the Cold War, the discussion of "mutual assured destruction" (MAD) assigned a major role to the notion of *deterrent intention*, on both the strategic and the moral level. And yet the language of intention can be shown to constitute the principal obstacle to understanding the logic of deterrence.

2.1. In June 2000, meeting with Vladimir Putin in Moscow, Bill Clinton made an amazing statement that was echoed almost seven years later by Secretary of State Condoleezza Rice, speaking once again to the Russians. "The antiballistic shield that we are going to build in Europe, they explained in substance, is only meant to defend us against attacks from rogue states and terrorist groups. *Therefore be assured:* even

[24] Cambridge University Press, 1996.

if we were to take the initiative of attacking you in a first nuclear strike, you could easily get through the shield and annihilate our country, the United States of America".

Plainly the new world order created by the collapse of Soviet power in no way made the logic of deterrence any less insane. This logic requires that each nation exposes its own population to certain destruction by the other's reprisals. Security becomes the daughter of terror. For if either nation were to take steps to protect itself, the other might believe that its adversary considers itself to be invulnerable, and so, in order to prevent a first strike, hastens to launch this strike itself. Before being a doctrine, MAD is a situation, in which nations are at once vulnerable and invulnerable: vulnerable because they can die from attack by another nation; invulnerable because they will not die before having killed their attacker—something they will always be capable of doing, thanks to a second-strike capacity, no matter how powerful the attack that will have brought them to their knees. Clearly the confrontation between the US and North Korea doesn't meet this definition, nor would a face-off between Israel and a nuclearized Iran.

2.2. Throughout the Cold War, two *a priori* arguments were made that seemed to show that nuclear deterrence in the form of MAD could not be effective. The first argument has to do with the non-credible character of the deterrent threat under such circumstances: if the party threatening a simultaneously lethal and suicidal response to aggression that endangers its "vital interests" is assumed to be at least minimally rational, calling its bluff—say, by means of a first strike that destroys a part of its territory—ensures that it will not carry out its threat. The very purpose of this regime, after all, is to issue a guarantee of mutual destruction in the event that either party upsets the balance of terror. What chief of state having in the aftermath of a first strike only a devastated nation to defend would run the risk, by launching a retaliatory strike out of a desire for vengeance, of putting an end to the human race while committing suicide in the process? In a world of sovereign states endowed with the minimal degree of rationality that Hobbes granted to the inhabitants of the state of nature, namely the instinct of self-preservation, the nuclear threat has no credibility whatever.

The credibility question occupies the great majority of the debates about ND. Many experts conclude in particular that it is folly to make extreme threats that one is not sure one will deliver on. If your enemy calls your bluff, either you deliver and you risk what Clausewitz called the escalation to the extreme, that is mutual annihilation, or you cave in and your credibility is down for the future. One of the best ways to keep your credibility intact is to multiply the occasions in which you show the world

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that your threats are not empty words: you do deliver and build a reputation of toughness.

2.3. The last remark leads to the second argument present in the literature that likewise points to the incoherence of the MAD strategic doctrine. Its premise is that, in Leon Wieseltier's words, "Nuclear deterrence is the only public arrangement that is a total failure if it is successful only 99.9 percent of the time". To be effective, ND must be absolutely effective. Not even a single failure can be allowed, since the first bomb to be dropped would already be one too many. But in that case never will the adversaries be in a position to test the other's resolve to deliver on its threats. Perfect nuclear deterrence is said to be self-defeating or "self-stultifying"[25] since it undermines the very conditions that would make it efficient.

2.4. Nuclear deterrence doesn't work because the threat to retaliate is not credible. It doesn't work also because if it did, that assumption would lead to a contradiction. Those two reasons add up to the conclusion that the nuclear opponents are unable to deter one another. And yet, the Cold War, also known as Nuclear Peace, seemed to demonstrate the opposite, in spite of a significant number of "near-hits". An explanation had to be found.

Belatedly, it came to be understood that in order for deterrence to have a chance of succeeding, it was absolutely necessary to abandon the notion of deterrent *intention.* In principle, the mere *existence* of two deadly arsenals pointed at each other, without the least threat of their use being made or even implied, is enough to keep the warheads locked away in their silos. As two major philosophers put it, "The existence of a nuclear retaliatory capability suffices for deterrence, regardless of a nation's will, intentions, or pronouncements about nuclear weapons use". [Gregory Kavka[26]]; or:

[25] Expression used by Gregory Kavka (*Moral Paradoxes of Nuclear Deterrence*. Cambridge. Cambridge University Press, 1987) apropos of a different but kindred argument, which has for a long time been the ethical justification of the French nuclear doctrine known as deterrence "from the weak against the strong". The claim is that the deterrent intention to inflict "incommensurable" harm to the other party if it attacks you, is not a genuine intention, since your true intention is to not have to carry it out. As the tortuous expression goes, "We form the deterrent intention in order to make it so that the conditions that would lead to its being acted upon are not realized".

[26] Op. cit., p.48.

"It is our military capacities that matter, not our intentions or incentives or declarations". [David K. Lewis[27]].

Initially due to McGeorge Bundy, this doctrine has received the name of existential deterrence. The insistence on the causal power of the mere existence of nuclear weapons is a way to downplay the importance of strategy, intentions, plans, all major constituents of military thinking. If there is no need to threaten anyone it is because the weapons themselves, due to their incommensurate power, speak for us. If rationality plays a role here it is "the kind of rationality in which the agent contemplates the abyss and simply decides never to get too close to the edge".[28]

3. Fate and the Tiger

How exactly does existential deterrence work? Who or what deters whom? It is significant that the explanations provided by the best theoreticians rely on a non-human actor. We will consider two of them.

Let's start with David K. Lewis and the following quote:

"*You don't tangle with tigers – it's that simple*". [29]

The implication is that the game is no longer played between two adversaries. It takes on an altogether different form. Let's admit we are convinced that neither is in a position to deter the other in a credible way. *However, both want and need to be deterred*. The way out of this impasse is brilliant. It is a matter of creating jointly a fictitious entity that will deter both at the same time. The game is now played between one actor, humankind, whose survival is at stake, and its double, namely its own violence exteriorized in the form of a wild animal. The fictitious and fictional "tiger" we'd better not tangle with is nothing other than the violence that is in us but that we project outside of us. It is as if we were threatened *but also protected* by an exceedingly dangerous entity, external to us, whose intentions toward us are not evil, but whose power of destruction is infinitely superior to all the earthquakes or tsunamis that Nature has in store for us.

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[27] David K. Lewis, "Finite Counterforce" in Henry Shue (ed.), *Nuclear Deterrence and Moral Restraint*, Cambridge, Cambridge University Press, 1989, p. 67.
[28] Steven P. Lee, *Morality, Prudence, and Nuclear Weapons*, op. cit., p. 248.
[29] David K. Lewis, loc. cit., p. 68.

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According to French anthropologist René Girard,[30] the sacred stems from a similar mechanism of self-externalization of human violence. It used to be said of the atomic bomb, especially during the years of the Cold War, that it was our new sacrament. Very few among those who were given to saying this sort of thing saw it as anything more than a vague metaphor. But in fact there is a very precise sense in which the bomb and the sacred can both be said to *contain* violence in the twofold sense of the verb "to contain": to have within oneself and to keep in check. The sacred holds back violence through violent means, the original one being sacrifice. In the same way, throughout the Cold War, it was as though the bomb had protected us from the bomb. The very existence of nuclear weapons, it would appear, had prevented a nuclear holocaust.

One must not come too near to the sacred, for fear of causing violence to be unleashed; nor should one stand too far away from it, however, for it protects us from violence. Likewise, we cannot risk coming too close to the nuclear tiger, lest it should devour us; nor can we risk standing too far away, lest we forget the danger it represents. For deterrence to work it's all about finding the right distance from the big cat.

The second quote is from Bernard Brodie:

It is a curious paradox of our time that one of the foremost factors making deterrence really work and work well is the lurking fear that in some massive confrontation crisis it may fail. Under these circumstances one does not tempt fate.[31]

Fate has replaced the tiger, but both images have in common that they place the deterrent in something else than human agency. We will return in the conclusion to a salient feature of this extraordinary quote, namely that it conjoins contingence (eventuality of failure) and necessity (fate), but we can pause at this stage and consider the following claim: the metaphysics of nuclear deterrence in its existential form is projected time. The renunciation of strategic thinking, the recourse to fate and the minimization of human agency, are all features that point in that direction.

4. Nuclear Deterrence in Projected Time

[30] *Violence and the Sacred*, New York: Continuum, 2005; origin. 1972. See also Jean-Pierre Dupuy, « René Girard. Desire, Violence, and Religion », *Inference*, vol. 2, issue 2.
[31] Bernard Brodie, *War and Politics*, New York, Macmillan, 1973, p. 430–31.

Let us admit for the sake of the discussion that the threat that underlies nuclear deterrence in its MAD form is not credible. The reasoning that supports this conclusion is strategic, and it is grounded in the metaphysics of occurring time. We reason by backward induction and we posit that if the bluff of the menacing party is called, the latter will prefer to yield rather than being annihilated. The would-be attacker won't be deterred. The question is, doesn't projected time provide an alternative ground that would account for the efficiency of nuclear deterrence?

Given what we have learned in the first part of this paper, we can easily reach a conclusion, and it is negative. In projected time, nuclear deterrence doesn't fare better than in occurring time, but it is for entirely different reasons. The reasoning goes as follows:

1. If deterrence works the escalation to the extreme, that is, the realization of the MAD threat, doesn't take place.
2. If the escalation to the extreme doesn't take place, then it is impossible. [Negation of Diodorus' 3rd axiom.]
3. If it is impossible, then nuclear deterrence doesn't work.
4. We have shown that if nuclear deterrence works, then it doesn't work.
5. Therefore, nuclear deterrence doesn't work.

The core of this argument is of course proposition 2, which expresses the condition that in projected time the future is necessary: an event that happens neither in the present nor in the future is an impossible event.

This reasoning gives a solid foundation to the second argument put forward by the critics of MAD. The alleged "self-defeatingness of a successful deterrence" appears to be a tortuous way of expressing a straightforward *reductio ad absurdum* (propositions 4 & 5).

The detour via the metaphysics of projected time proves unsuccessful. There is a way however to render it successful and it consists in taking seriously the dialectic between contingency and necessity that is suggested in Bernard Brodie's quote. Meanwhile we are going to realize that projected time is capable of solving the paradoxes of nuclear deterrence much more easily than strategic reasoning.

5. Nuclear Deterrence and the Indeterminacy of the Future

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The suggestion that the manipulation of uncertainty can be a strategic tool that helps solve the credibility problem is not new. The conviction that if the agents are minimally rational they won't deliver on their threat to retaliate and launch the escalation to the extreme has led to the idea that it can be rational to pretend that one is irrational. It was first conceptualized by economist and game theorist Thomas Schelling in his landmark *The Strategy of Conflict*[32] but made famous under the moniker "Madman Theory" by Richard Nixon during the Vietnam War. The following quote is eloquent. Nixon to his chief of staff H. R. Haldeman:

> I call it the Madman Theory, Bob. I want the North Vietnamese to believe I've reached the point where I might do anything to stop the war. We'll just slip the word to them that, "for God's sake, you know Nixon is obsessed about communism. We can't restrain him when he's angry—and he has his hand on the nuclear button" and Ho Chi Minh himself will be in Paris in two days begging for peace.[33]

The problem of course remains: what happens if the other side calls your bluff? In the face-off between Donald Trump and Kim Jong Un that scared the world during the summer of 2017, the question was, who is pretending to be mad and who is not pretending, because he is really mad?

However, in Brodie's quote, we are no longer talking strategy. The twofold reference to fate and the eventuality of failure takes us to a completely different world. The notion that it requires an accident for fate to come to pass is as old as the oldest myths of the planet. Think of Oedipus: it was proclaimed by the Oracle that he would commit parricide and incest. What precipitated the realization of this prophecy was a random encounter with a disgruntled old man who was barring his way. The merger of fate and accident is a common theme of many religious traditions. Rome had a goddess who represented at the same time luck (good or bad) and fate—or, to use the language of modalities, contingency and necessity. Her name was *Fortuna*.

Once again, the metaphysics of projected time offers a framework capable of giving a precise and formalized rendering of these intuitions. The key is a concept I haven't yet introduced: the uncertainty of the future in projected time.

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[32] Harvard University Press, 1960.
[33] Haldeman, H. R., *The Ends of Power*, Times Books, 1978, p. 122.

The uncertainty of the future in *occurring* time is approached with the usual tools. In the Madman theory, the agent confronting some crazy behavior asks himself whether the folly is feigned, in which case the Madman will likely yield if his bluff is called, or whether he is *really* mad, in which case he may launch the escalation to mutual destruction if attacked. The agent ascribes a subjective probability epsilon, hopefully very small, to the latter possibility and the complement to 1 to the former. The way he comes to a decision is left to him—he may deem the Savage criterion of the maximization of expected utility senseless if the magnitudes are extreme: exceedingly large for the consequences, very small for epsilon—, but one thing is assured: the two options make up a partition of the set of possibles, that is a *disjunction* without overlap.

In projected time, uncertainty takes on a radically different form. There are no alternative possible futures, since the future is necessary. What replaces the disjunction is a *superposition* of states. Both the escalation to the extreme and its negation are part of the fixed future. It is because the former figures in the future that deterrence has a chance to work. It is because the latter figures in the future that the adversaries are not bound to destroy each other. Only the future when it comes to pass will tell.

The signature feature that distinguishes the two forms of uncertainty is the following: in occurring time, epsilon, the probability of the catastrophic scenario, can be equated to zero without that leading to a contradiction. If we continue to call epsilon the relative weight that this scenario has in the superposition of states, then it is essential that epsilon remain strictly positive. Were it to become naught, the escalation to the extreme would become impossible, for the reasons already adduced, and deterrence would fail. Superposition of states and strict positivity of epsilon are kindred concepts.

It's time to conclude. The nuclear deterrent that really works has been, and still is potentially, *the indeterminacy of the future in a conception of time that makes the future necessary*. It is indeed possible to provide rational foundations to the efficiency of nuclear deterrence. And that conclusion is horrendous.

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Tetsugaku
International Journal of
the Philosophical Association of Japan
Volume 6, 2022

II Refereed Article

Kant on the Justification of Testimonial Belief

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***Abstract**: This study aims to explore the debated question of whether Kant's theory of testimony is reductionist or non-reductionist. While the former position considers testimony to be a basic source of knowledge without any rational inference (on par with perceptions), the latter requires additional inductive support concerning the qualities of testifiers through which we can rely on their testimony. As Kant emphasized rigorous objective validity as a key criterium of true knowledge in its narrow sense, most Kant scholars assumed his stance on testimony to be an orthodox reductionist one. A reductionist position questions testimonies as a reliable epistemic source of knowledge because not every testimonial belief demonstrates universal objective validity. However, recent research shows that Kant does acknowledge testimony as a source of human knowledge and that his works reflect the non-reductionist theory of testimony. This surprising conclusion is endorsed by an emphasis on Kant's "presumptive principle" as the bona fide condition of testimony acceptance. That is, by virtue of moral obligations of humanity, we must, by default, accept all testimonies as true until proven otherwise. I argue that this moral-based approach may minimize Kant's multiple allusions to the reductionist position of testimony acceptance and the role of epistemic justification of testimonial belief. To address this conundrum, I explore the structure of the truth-oriented, evidence-based approach to the acceptance of testimony and show its epistemic conditions through a modified reductionist position. Finally, I show that acceptance of testimony must rely on both moral basics and theoretical grounds. That is, we need to respect each other due to our shared humanity while simultaneously validating the epistemic grounds of testimonial information. Understanding Kantian epistemology of testimony provides important insights into our urgent problems, such as fake news, within the fields of social ethics and epistemology.*

1. Introduction

Immanuel Kant's most widely known work, the *Critique of Pure Reason*,[1] aimed at answering the theoretical question "What can I know?" and is regarded as a noteworthy text even for contemporary epistemologists. Until recently, many scholars understood Kant as an exponent of epistemic individualism—a position that did not admit testimony [Zeugnis][2] as a reliable source of knowledge and claimed epistemic self-sufficiency. This perspective has explanatory merit as it separates Kant from Hume and others who accept social justification as a reliable source of knowledge.[3] Admittedly, Kant's motto of the enlightenment, "Think for yourself", seems connected to the argument that we should avoid the state of immaturity, namely, being influenced by others' opinions, and compels us to be autonomous cognitive subjects. However, against these preconceptions,[4] scholarship on Kant from the past 20 years shows that others' testimony can also constitute a reliable source of proper knowledge in the Kantian schema.

As previous studies have shown, Kant was fully aware that we, as human beings, are subject to epistemic interdependence.[5] Kant scholars have further argued that his position concerning testimony is what is presently referred to as "non-reductionism" which admits epistemic license of testimonial belief as granted by itself,

[1] I refer to passages from the *Critique of Pure Reason* by the page numbers of the first (A) and second (B) edition. All other works by Kant are cited according to the volume and page numbers in *Akademie-Ausgabe* (1900–). I refer to Kant's text in the following order: Abbreviation, AA. Volume: Page. For all abbreviations, see the list of abbreviations at the end of this manuscript. The translation is based on The *Cambridge Edition of the Works of Immanuel Kant* (1996–), from which I occasionally diverge slightly. All translations of the cited articles are mine.

[2] In this paper, I use the word "testimony" as counterpart of German *Zeugnis,* in accordance with the previous research. See Gelfert (2015).

[3] It is true that Humean epistemology also has an individualistic element, such as in impression and perceptions. However, unlike Kant, Hume acknowledged that our knowledge of causality depends on our collective customs and habits of thought.

[4] For example, although Coady (1992) provides an excellent overview, he does not mention Kant's testimonial knowledge (Coady 1992, 179–82, 186–88). As a notable exception, see Gelfert (2014). Although I find that there is room to argue against his moral-based interpretation of Kant's epistemology of testimony, this excellent work should be highly appreciated for its comprehensiveness.

[5] The term "epistemic dependence" has several connotations but generally refers to a situation that does not admit epistemic self-sufficiency. For example, we know our place of birth regardless of whether we can remember it. This kind of knowledge is based on others' testimony, and this way of acquiring knowledge is called "epistemic dependence". For a discussion of cognitive self-sufficiency in Kant, see O'Neill (2002, 258).

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on par with perceptual information (cf. Scholz 2001, Gelfert 2006, Shieber 2010).[6] Notably, most researchers suggest that, in Kant, we are motivated to accept others' testimony based not on the existing evidence but on moral obligation (Gelfert 2006, 633–6 and 649; Mikalsen 2010, 37; Longworth 2017, 251–2 and 264). Accordingly, doubting what others say by default is a morally objectionable state of mind, which according to Kant indicates a "lack of moral interest" (Refl, AA. 16: 509). I discuss this point in section 2 and identify in what sense the rejection of testimony is considered to be morally objectionable.

In contrast, Shieber emphasizes Kant's allusion to reductionism, in which the acceptance of testimony requires additional inductive support (Coady 1992, 22), while also acknowledging the difficulty of deciding whether Kant's stance regarding testimony's credibility is reductionist or non-reductionist (Shieber 2010, 334–336). For example, Kant says, "here [testimony based on the divine oracles] grounds cannot be believed subjective, then, but instead, all grounds must be examined exactly" (V-Lo/Wiener, AA. 24: 896–7) and "historical belief rests in important cases on such a doubtful basis that it has to be examined closely" (V-Lo/Wiener, AA. 24: 899). This view can be understood as reductionist because it requires scrutinizing testimony on epistemic grounds. Kant's text also supports a non-reductionist interpretation that deserves particular emphasis because this perspective is intimately connected with some core concepts of Kant's moral philosophy. Nevertheless, considering new interpretations of Kant's texts, his apparent reductionist stance regarding testimony acceptance calls for a theoretical exploration. Therefore, examining the theoretical, truth-oriented criteria concerning the acceptance of testimony is indispensable to further develop this line of research.

This paper proceeds as follows.[7] First, I show that Gelfert (2006) and Longworth (2017) identify the plausibility of the "presumptive principle"—a

[6] We could formalize this position in different ways. Non-reductionists in the weaker sense would claim that testimonial belief need not to be justified or grounded by other fundamental beliefs; whereas in the stronger sense, they may claim that testimonial belief is irreducible to other type of beliefs by its nature. The majority of the current Kant studies incline to hold a strong non-reductionist position.

[7] The current studies on Kant's concept of testimonial belief frequently mention unpublished lecture notes taken by students, not only Kant's published works. Although this method has become widely accepted to date, specifically within the community of anglophone interpreters, there are remaining worries about the reliability of unpublished texts. However, given the aim of this paper, it does not matter, because I am just trying to show an underestimated "reductionist" aspect of Kantian epistemology of testimonial belief. It is irrelevant to the question *how* Kant developed his thought historically. Therefore, it does not undermine my

condition that requires accepting testimonies on a moral basis—primarily in the context of practical rather than theoretical philosophy. I call this the "moral-based approach" and argue that this approach is insufficient to fully expound Kant's epistemology of testimony. Second, I explore two conditions that allow people to adopt the moral-based approach without succumbing to naive obedience to others: the principle of exclusion of lies discussed by Shieber (2010) and the reliance on the epistemic authority of experts introduced by Mikalsen (2010). Third, I discuss the reductionist aspect of Kant's stance on testimony's acceptance indicated by Shieber (2010) by proposing an "evidence-based approach", which confirms that Kant's emphasis on the empirical justification of knowledge relies on the universalization of the first-order *grounds* of testimony in others' understanding. Finally, I show that Kant's epistemology of testimony includes both non-reductionist and reductionist aspects that are not antithetical but serve the same goal of "enlightenment" in human society. Understanding the Kantian enlightenment epistemology of testimony may provide important insights into the urgent task of dealing with the profusion of unfaithful belief reports, such as fake news, to which we are increasingly exposed.

2. Moral basis of the presumptive principle

Before discussing testimony-based knowledge, we should determine the extent to which beliefs and knowledge are interchangeable. In the tradition that defines knowledge as justified true belief, this issue would seem irrelevant. However, Kant's idea of a priori synthetic "knowledge", which he painstakingly endorses, is distinct from "belief". For example, mathematical knowledge is independent of our empirical knowledge and valid for all subjects, albeit with slight differences in notation. In contrast, as with the historical or geographical knowledge, an increase in our spatiotemporal distance from the source can make us less confident in the validity of the knowledge. Then, empirical knowledge can be called belief according to its "degree" of certainty. Thus, knowledge has both a narrow and a broader sense in Kant's text. The former is distinct from belief, whereas the latter is continuous with

theoretical argument, although it is possible that the reliability of texts may change as historical research progresses. As we will see, what is indicated in lecture notes can be well fixed in the corpus of Kant's theory of empirical knowledge.

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it. In either case, belief can be defined as the "subjectively sufficient but at the same time objectively insufficient holdings-to-be-true [Fürwahrhalten]" (A822/B850).[8]

A well-known dictum of the Kantian distinction of knowledge from belief is as follows: "I therefore had to annul knowledge [Wissen] in order to make room for belief [Glaube]" (B xxx). Kant also maintains that "pure rational belief can never be transformed into knowledge by any natural data of reason and experience" (WDO, AA. 8: 141). This narrow sense of knowledge can help identify a narrow sense of belief. It is "rational belief [Vernunftglaube]" that makes human morality and religion possible. The main examples are "the immortality of the soul" and "the existence of God," which are shown in KrV's Dialectic as theoretically unknowable but still required by practical reason as objects of moral interest (A829/B857). In the *Critique of Practical Reason*, pure practical reason provides justification for the object of belief, which is referred to as the "primacy" of practical over theoretical reason (KpV, AA. 5: 121). However, the primacy of practical reason is valid solely for the finite rational existence of humankind, not for God. Thus, although rational belief has a certain credibility, it must be considered as distinct from knowledge.

Kant also discusses the notions of knowledge and belief in a broad and empirical sense. Belief becomes empirical knowledge when its degree of certainty increases. Similar to belief, such empirical knowledge can be proven false and is, therefore, provisional, and not eternally true.[9] Beliefs related to empirical knowledge rely solely on containing empirical facts while holding them as propositional content. As emphasized in previous studies, this frangibility is an earmark of testimony-based

[8] For research on holding-to-be-true [Fürwahrhalten], see Stevenson (2003), Chignell (2007a, 2007b), Pasternack (2011, 2014), Höwing (2015, 2016, 2017), Stang (2016), and Shigeta (2020). These studies focus on the so-called "SOIS-distinction" problems and whether Kant's theory of belief is continuous or discontinuous with his conception of knowledge. Since I already showed a comprehensive picture of Kant's theory of holding-to-be-true, I do not argue it here. For detailed discussion on the section "On having an opinion, knowing, and believing" in KrV, see my previous paper Shigeta (2020, in Japanese).

[9] Willaschek and Watkins (2020) argued that we should differentiate cognition [Erkenntnis] from knowledge [Wissen] in Kant. One of the main distinctions lies in the fact that the latter necessarily requires truthiness, whereas the former does not (Willaschek and Watkins 2020, 3209). Thus, it seems implausible to say that knowledge can be faulty. However, the frangibility of empirical knowledge is not in contrast with their main arguments for two reasons. First, *S* believes that their empirical knowledge is *true* at any rate. Second, testimonial knowledge acquisition requires epistemic justification or the compiling of information, which coincides with Willaschek and Watkins (2020, 3208–9). For instance, Kant says "*opining* can gradually be supplemented by the same kind of grounds and finally become a *knowing*" (WDO, AA. 8: 141).

knowledge. Focusing on this broad sense of knowledge, I consider that Kant positions it under the umbrella term of "historical" cognition, which is similar to "empirical" cognition and opposed to "rational" cognition (A836/B864).[10] In addition to historical events, knowledge of geography and doctor's diagnoses (which Kant calls "pragmatic" beliefs) also constitute examples of historical cognition. Pragmatic beliefs generally involve making tentative judgments about the execution of an action based on finite empirical evidence; thus, they are not limited to medical practices, and also include other action-directed beliefs such as "practical precepts" about executing moral actions.[11] Hence, the breadth of testimonial knowledge covers various disciplines across theoretical and practical fields.

A question then arises regarding the meaning of "presumptive principle" and its motivating factors according to previous research. Although first discussed by Scholz (2001), Gelfert (2006) was the first to use this principle as a foundation of the moral-based approach to testimony acceptance.[12] The presumptive principle stems from Kant's rule of fairness: "everyone is presumed good until the opposite is proved. [Quilibet prosumitur (read: praesumitur) bonus. Donec probetur contrarium.]" (V-Lo/Blomberg, AA. 24: 246). This principle does not determine what we can believe but functions negatively, namely, we should not doubt others without sufficient reason (Gelfert 2006, 633–4). Although Gelfert is aware that this principle "does call for a specification of the social and institutional conditions that circumscribe its applicability" (2006, 634) and that these conditions are identified as the three Kantian maxims of *sensus communis* (cf. Gelfert 2006, 642, 644), according to Gelfert, this principle does not require epistemic justifications regarding the validity of the testimony. "Kant. . . does not attempt to justify testimony by accumulating empirical

[10] Some might argue that we were taught mathematics by someone's telling. However, this is not the case in Kant because mathematics is knowledge based on proof, not an accumulation of beliefs (KU, AA. 5: 468; V-Lo/Pölitz, AA. 24: 542). Whereas it is possible to talk about mathematical truth in ordinary conversation, it has nothing to do with mathematical knowledge (V-Lo/Wiener, AA. XXIV 895). If one believes it blindly without critical examination, it is only a "prejudice to authority" (V-Lo/Bauch 139).

[11] The practical precept is a judgement such that if you want to be wise, safe, or happy, you have better to do x instead of y, given the empirical circumstances (cf. KpV, AA. 5: 20, 31, 33).

[12] Gelfert also maintains this moral-based approach in his other work (2010, 84–5, 87). This study aims to suggest a historical background and *possibility* of "Kantian social epistemology", which are noteworthy in contexts of contemporary both epistemology and Kant scholarship. In my opinion, when my evidence-based approach is squared with his moral-based approach, we could reconstruct Kantian social epistemology systematically, which Gelfert (2010) hinted at as something unlikely to be achieved.

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evidence of its reliability" (Gelfert 2006, 632). I call this line of reasoning the moral-based approach to testimony acceptance.

Notably, Kant uses two different types of incredulity: *ungläubisch* and *ungläubig* (Refl, AA. 16: 508f.). The former is an attitude of not trusting anything other than oneself, whereas the latter is more modest because it just requires us to not believe what others say *without sufficient evidence*. In this paper, I refer to the first as "Incredulous$_1$ [ungläubisch]" and the latter as "Incredulous$_2$ [ungläubig]" following Gelfert's notation. Incredulous$_1$ is akin to rigorous skepticism and is objectionable because it leads to "logical egoism", which will be expounded in the next section.[13] providing grounds for its rejection. However, Gelfert also rejects Incredulous$_2$, which implies not believing others' testimony *without theoretical evidence*, by the same charge as the former. He concludes that "whereas incredulity with respect to testimony is morally objectionable because it generates an attitude of suspicion and undermines the practice of promises and social life. . . the second, more general form of incredulity is *equally* objectionable, not least because it ignores that theoretical certainty is not always required for *moral certainty*" (Gelfert 2006, 635, emphasis mine).

Although there is room to question whether Incredulous$_2$ should also be "equally" discarded, his argument is based on the following rationale. First, considering the absence of a method to calculate the *probability* of certainty of an interlocutor's testimony in Kant's works, a tenable communication requires, at a pragmatic level, certainty that our interlocutors are rational human beings (Gelfert 2006, 631–2, 635–6). Second, Kant maintains that perception and testimony are *equally* reliable (V-Lo/Wiener, AA. 24: 896). These arguments seem to suggest that we have to accept testimony with as much certainty as perception without expecting to be able to ascertain the reliability of the testimony depends on theoretical evidence. We are thus "obliged" to believe others' testimony because of the *de facto* moral certainty that is independent of theoretical evidence.[14] According to Gelfert,

[13] Hinske (1993: 64-5) had shown Kant's historical inheritance of the idea, "logical egoism" from Meier's *Auszug* (1752). The logical egoism is an art of thinking in which one regard their judgements as true/false without any inquiry for others. This is opposed to logical pluralism in Kant (V-Lo/Philippi, AA. 24: 427-8; V-Lo/Wiener, AA. 24: 874).

[14] Although his rationale has textual support, his argumentation is based on a logically implausible inference. Namely, it holds only when we take the numerical calculation of credibility as a *necessary condition* of testimony acceptance in Kant. However, given that Kant stipulates scrutiny of epistemic grounds of testimony acceptance in several passages, the calculation of probability in itself is not a necessary but a mere *sufficient condition* of this acceptance. Therefore, even if there is no formula to reckon the testimony's credibility, it does not follow that it is futile to consider the given evidence. The theoretical necessary condition

incredulity in general indicates a "lack of moral interest" (Refl, AA. 16: 509) and amounts to a self-violation of human dignity, because for Kant "true dignity of man rests on morality" (V-Lo/Wiener, AA. 24: 903).

However, given that testimonial knowledge concerns empirical facts, if the goal is to acquire empirical knowledge about the truth, it seems unsettling to suppose that moral certainty solely motivates the presumptive principle. This raises questions as to whether a theoretical basis of empirical knowledge could be formed in terms of the truth-directedness of testimonial belief.

There is textual evidence in support of Incredulous$_2$ that is in tension with Gelfert's moral-based approach and guides us to the evidence-based approach to accepting testimony (which is discussed in section 4):

> If the term unbeliever, which also occurs in theology, is to mean a censure, it cannot consist in the difficulty of ascribing belief to a testimony, for that is no difficulty, but, inasmuch as it is a censure, the reason must be moral. The former can do him honor if he is ponderous or unbelieving. For example, in the case of a widespread rumor, this cannot be a moral disadvantage to him. In all narratives, it is good and praiseworthy to be unbelieving, and one must proceed critically in this when it is possible. (V-Lo/Wiener, AA. 24: 900; translation mine)

Given this passage, Incredulous$_2$ can be understood in a positive sense.[15] Thus, for now, I suggest restricting Gelfert's claim to Incredulous$_1$, a rigorous logical egoism, and consider that the presumptive principle works to refute it. Nonetheless, there is ample room to discuss whether the acceptance of testimony requires any sort of justification. For this, we must accept the presumptive principle as a rudimental state of mind, which is a prerequisite to communicating with others.

Longworth is another proponent of this moral-based approach. He argues that trusting others "can be reasonable despite our lacking evidence because we can

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of testimony acceptance, which must be presupposed as equal to the practical necessary condition (i.e., presumptive principle), should confirm whether testimony is based on the objective field of our possible experience in general.

[15] Gelfert also refers to V-Lo/Wiener, but never mentions the quoted passage. Provided that a similar argument is found in V-Lo/Blomberg, AA. 24: 249, this is likely Kant's legitimate opinion. Gelfert also refuses Incredulous$_2$ by arguing "practical-necessity" in Refl, AA. 16: 509. However, given Kant's terminology of "practical-necessity" in the context of the necessity of postulating the transcendental ideas, it is plausible that what is practically necessary is not the acceptance of others' testimony but pure moral beliefs.

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possess practical reasons for holding that others will be reliable" (Longworth 2017, 251). Key to his understanding is Kant's asymmetrical argument that the certainty of "moral faith" can be warranted solely by practical reason, generally known as the "primacy of practical reason" (Longworth 2017, 264).[16] According to Longworth, "In particular, faith is grounded in the moral demands. Thus, faith is grounded in practical rather than theoretical reason" (Longworth 2017, 251–2).

Longworth is correct regarding "rational beliefs [Vernunftglaube]", because we only need pure reason to be certain of rational beliefs. In this case, practical reason can be expected to hold supremacy over theoretical reason. However, it leaves room for debate regarding the relationship between purely rational beliefs and empirical testimonial beliefs. In his closing section, Longworth rightly acknowledges that it is still possible to argue that in believing testimony, "we have sufficient evidence to hold that people will be reliable" (Longworth 2017, 251, 268–70). Kant indeed mentions a trade-off between trusting others generously and withholding trust on a theoretical basis. For instance, we should trust our friends and disclose details about ourselves believing that it is morally wrong to lie to them. However, it is wise not to overexpose one's weaknesses, considering that our friends can also become our enemies (V-Mo/Collins, AA. 27: 429–30). Kant expresses his skepticism about placing de facto trust in others without sufficient theoretical basis.

The presumptive principle that prohibits doubting *all* testimony of others by default seems to confirm as Kant's legitimate claim. However, the validity and the argumentative stance of this principle seem to vacillate between theoretical and practical motivation. The former involves the enlargement of our true knowledge, whereas the latter comprises the accomplishment of morality and humanity. Although previous studies have stressed the latter aspect, and taken the moral-based strategy, I explore another possibility suggested by Longworth (section 4), which argues that, we trust others by drawing on sufficient evidence ("the evidence-based approach"). The point is worth arguing because it helps explain Kant's positive assessment of Incredulous$_2$, as quoted above. Squaring evidence-based approach with the moral-based interpretation can potentially improve the current understanding of the theory of testimonial belief in Kant. Before exploring the evidence-based approach, I discuss

[16] In my view, Longworth makes this claim possible by combining *belief* with *faith*. In German, both are expressed by the word "Glaube". However, in light of the twofold meaning of *Glaube*—the narrow meaning *rational faith* [Vernunftglaube] and the broader sense of *mere belief*—it seems better not to mingle faith with testimonial belief.

how the presumptive principle can be employed without ensuing a slavish epistemic dependence on others, even with the moral-based approach.

3. Two critical conditions

According to the "presumptive principle", testimonial belief reports are accepted in the absence of apparent counterexamples. Similarly, the systematic rejection of testimony is a path to the "logical egoism".[17] A logical egoist "considers it unnecessary to test his judgment also by the understanding of others" (Anth, AA. 7: 128). In KrV, gauging the validity of one's experiences through others is an essential criterion to confirm that conviction is more than mere persuasion (A820/B848). Logical egoists attempt to get away without testing the generalization of their perceptions with others, considering their views accurate without testing them. This egoism can be further explained as a form of insanity because, for example, egoists are even certain of auditory hallucinations (Kant gives the example of a voice or a bell ringing). As Kant says, "persuasion [Überredung] cannot be distinguished from conviction [Überzeugung] subjectively when the subject has taken something to be true merely as an appearance of his own mind" (A821/B849). To reach the truth, the egoistic state must be abandoned. In contrast, the extreme opposite of this egoism is the absolute lack of personal opinion and treating something as true based on whatever the majority says. This extreme "banality [Alltägliche]" is another object of Kant's criticism since it leads our understanding to a comfortable "sleep" (Anth, AA. 7: 129; WA, 8: 35). Thus, while accepting others' opinions according to the "presumptive principle" we must consider the "critical" conditions that prevent us from becoming enslaved by those opinions. Prior studies have shown that such criteria lie in Kant's three maxims of common human understanding or *sensus communis*, presented in the *Critique of the Power of Judgment* (KU, AA. 5: 294–5): "1. To think for oneself; 2. To think from the position of everyone else; 3. To always think in accordance with oneself". The first is called the maxim of "enlightenment", the second "broad-mindedness", and the third "consistence".

[17] There are other tokens of egoism, namely, the egoism concerning taste and morality (Anth, AA. 7: 130). The latter is exhibited by eudaemonists who limit all ends of action to their happiness. Eudaemonists would show lack of moral interest in Kant's sense because all their seemingly good conducts can be hypocritical and is, after all, not based on a universally valid moral principle. This reinforces my suspicion that there was some discrepancy in Gelfert's argument that logical egoism by itself shows a lack of practical interest.

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First, the maxim of broad-mindedness proposes that one cannot be indifferent about whose words constitute correct and reliable testimony. As Kant admitted:

> One judges most books by their covers. If I hear that the author is a well-respected man, I have more confidence in it. And if the subject matter is new, I have even more right to make a favorable judgment. Such judgments are necessary when I meditate while making a plan, although often much must be eliminated afterward. (V-Lo/Pölitz, AA. 24: 546–7; translation mine)

Thus, the criteria for recognizing a trustworthy testifier, intuitively speaking, are based on the speaker's "authority". Mikalsen (2010, 30) emphasizes that the reliability of the testifier only depends on their "epistemic authority", not "social authority".[18] The latter determines the reliability of a given testimony through the testifier's social status, whereas the former does it through the testifier's epistemic ability.[19] I is difficult to determine whether Kant was entirely hostile toward social authority because it is possible for someone with social authority to simultaneously possess epistemic authority. However, Mikalsen is justified in stating that social authority alone is not sufficient for a reliable testimony. As Mikalsen (2010, 29) notes, the motto of the enlightenment: "To think for oneself" does call for the other two maxims of *sensus communis*. The maxim of enlightenment is introduced by Kant as a "merely negative element" to rule out prejudgment (KU, AA. 5: 294).

Similarly, Fleischacker (2013, 23) notes that we should take Kant's enlightenment to be egalitarian, not elitist. That is, the question is not about who believes what, but how the belief is obtained. We do not take a particular belief to be true because of the social status of the testifier but by examining whether the testimony was valid based on the public use of reason. He states, "enlightenment demands just that one always pull one's private thoughts toward a publicly shareable touchstone, not that one has any particular set of such thoughts or endorses any particular public

[18] The concept of epistemic authority is closely related to a problem of the "testimonial injustice". For a thought-provoking examination of this topic, see Fricker (2007). Whereas she focuses on racism and sexism, her argumentation is adaptable to the wrong epistemic dependence in general. As an example, see Gelfert (2014, 193–214).

[19] Mikalsen emphasizes the knowledge of "experts". In the absence of relevant defeaters, "we ought to take at face value what experts tell us as long as their claims relate to their own field of expertise" (Mikalsen 2010, 39). However, for some reason, I do not see it that way. Among others, it seems an extremely narrow definition to take expertise as a knowledge solely held by academic experts. As for interesting sociological research on the layperson's expertise, see Collins and Evans (2007).

standard" (Fleischacker 2013, 25). In this respect, Kant's enlightenment is not achieved by becoming epistemic individualists but is achieved through a community of sincere and autonomous rational subjects.[20] Therefore, in terms of the presumptive principle, we are not compelled to merely accept all testimony uncritically but to start with the presumption of mutual trust because both the testifier and hearer are on par as rational beings.

In addition, we may question whether the testimony we encounter is truthful. For example, in our daily lives, experts may often lie by saying things counter to the truth as they know it or not disclosing all the information they have, owing to the restrictions placed on them by certain groups to which they belong. In my view, the key to solving this problem is closely linked to the consistency maxim in Kant. Considering Kant's general critiques of lying, Shieber's (2010) argument rightly indicates that one can accept testimonies without worrying about the liar problem. For instance, one of Kant's most substantial claims is that all lies inevitably lead to self-contradiction (cf. GMS, AA. 4: 422; KpV, 5: 44; MS, 6: 429; VRML, 8: 430). A lie can be defined as a claim that the claimant does not agree with. Suppose there is a computer in front of me. If I say that *p*: "There is a computer", I am stating a true judgment of the facts; if I deny it, while nevertheless *believing that p is true*, it is self-contradiction because I simultaneously imply *p* and ~*p*.[21] Saying what one believes as true is sincere, whereas saying what one does not believe is insincere. Crucially, every belief report is held to be "true" by the subject, as far as they believe it (Shieber 2010, 340).[22] A testimonial belief report, thus, cannot be a lie without being a self-contradiction. In light of the consistency maxim, lying is the self-destruction of reason and is inimical to all human reason. At any rate, when testimony is understandable by others, they presume the testifier is testifying reasonably. Therefore, given that fake testimony is irrational by itself, and understandable belief reports imply that the

[20] What we ordinally refer to *autonomous cognitive subject* is not strictly the "autonomy" in Kant because the latter means the self-legislation of the *moral law*. Rather, the autonomous subject here is much akin to "autocrat" in Kant. Although the word "autocracy" is associated with a monarchic way of reign, "autocrat" means one "who rules by himself" (MS, AA. 6: 339, 479). For a close examination, see Baxley (2003 and 2010).

[21] Lie is different from a simple misconception in that the latter asserts non-p, which is the predicate negation of *p* when the predicate should be *p*. This is not a contradiction.

[22] The famous "pure white lie [pia fraus]" is also unacceptable to Kant because it is a latent contradiction (cf. Refl, AA. 17: 25). On this point, see Schwarz (1970).

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testifier is a reasonable speaker, it is sufficient to take such understandable reports prima facie as reliable sources of truth-directed information (Shieber 2010, 341).[23]

Combining these two conditions with the presumptive principle, we can hold that testimonial belief reports are well-warranted cognitive sources when they are issued by rational, free agents.[24] This qualified presumptive principle would be sufficient to argue that testimonial beliefs in Kant are non-reductionist.[25] However, as I noted in section 2, there is also textual evidence that hinders us from denying Incredulous$_2$, and Kant distinguishes between logical egoism and practical egoism. Therefore, one can still argue that the evidence-based approach—another layer of the critical condition concerning the presumptive principle—is solely truth-oriented, a kind of justification of testimonial beliefs based on evidence. It is fully compatible with the moral-based approach in that it also draws on the three maxims of Kant's *sensus communis*. I now delve into the theoretical side of the broad-mindedness principle.

4. Evidence-based approach to testimonial beliefs

As per Shieber's (2010) observation, Kant presented non-reductionist and reductionist arguments about testimonial knowledge almost in parallel. However, these terms are not found in Kant and are introduced by today's epistemologists somewhat anachronistically; thus, Kant's indication of both standpoints is not necessarily a deficiency in his thinking.[26] Although the presumptive principle, combined with the

[23] Although all faithful reports must be truth-oriented, this does not entail that to speak truth we must necessarily disclose our private thoughts. The condition of sincerity inhibits our telling a lie from the first-person perspective.

[24] It would be impossible to assess the rationality of others from the outside. However, this fact does not undermine our argument, as it is enough for us to accept the testimony of others with a *relatively high degree of certainty* (cf. Chignell 2007a, 326). The fallibility of truthiness is an earmark of empirical knowledge based on testimony. Thus, it is sufficient to ask whether they testify in a normatively required manner, that is, the public use of reason and the condition of sincerity in speaker.

[25] There could be another condition, namely, the historical periodization condition; we must consider testimony's historical background before accepting it. For example, Kant mentions that, unlike modern historians, ancient historians (e.g., Herodotus, even Livy) valued a rhetorically beautiful narration over accuracy (V-Lo/Wiener, AA. 24: 898–9). However, this condition is outside the scope of this paper.

[26] As Scholz (2001, 838) claims, based on Coady (1992, 79ff.), Humean optimistic reductionism faces the problem of ambiguity in its epistemic justification, and Kant does not

three principles of *sensus communis* (i.e., autonomous, objectively valid, and consistent thinking), can render testimony credible, it does not logically entail that all testimony must be believed true solely on moral grounds without theoretical justification. After all, presumptive principles are established under the conditional phrase: "Until the opposite is proved". The pre-consideration of the absence of defeaters is needed to validate the presumptive principle. Gelfert suggests, "we must be ready to revise our (testimonial) beliefs, for example, when a comparison of our own judgments with those of others gives us reason to suspect that we are in error. This is what justifies an attitude of presumptive acceptance in the first place" (Gelfert 2006, 641–2).[27] The presumptive principle does not stand independently before other principles of *sensus communis* but is in a reciprocal relationship with these principles. As Kant put it, our possession of *sensus communis* is "not an advantage or an honor" but rather the minimum condition of healthy understanding in general (KU, AA. 5: 293), which suggests that the presumptive principle, in support of *sensus communis*, does not endorse a solely moral-based acceptance of testimony. Thus, it is necessary to clarify the hidden theoretical aspects of the pre-conditions concerning the presumptive principle.

One of the most critical defeaters in contemporary epistemology is the liar's testimony; the notion of a lie is publicly denounced by the principle of consistent thinking. Accordingly, the pre-conditions of the presumptive principle should exclude not only the liar's testimony but also belief without sufficient objective evidence. Scholz (2001, 388) suggests that "another presumption" regulates "the burden of the proof condition [Beweislastverhältnisse]". I argue that the broad-mindedness condition, in conjunction with the enlightenment condition, compels testifiers to explain the basis of their testimony. The moral-based approach claims that the moral interest of practical reason mandates us to respect the "humanity" of others, supposedly to motivate the presumptive principle. However, this view cannot provide theoretical criteria concerning evidence. In my opinion, Incredulity$_2$—not believing p until and unless there is sufficient theoretical ground, refers to this theoretical insight

succumb to Humean reductionism. Thus, he seems to prefer non-reductionism in Kant. However, this objection only stands when we presume that Kant's epistemology is similar to Hume's. Although I cannot compare Kant and Hume in this article, I am inclined to deny this extravagant presumption and preserve the possibility of reductionism in Kant.

[27] Gelfert (2006, 638) also acknowledges that the adoption of testimony works by connecting others' experiences with one's own and spotting any inconsistencies with the universal truths of reason or violations of them, such as mathematical facts. Although his understanding seems closely connected to the reductionist approach, he explicitly denies that this comparison constitutes inferential reasoning.

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and is indispensable. Similarly, according to Fleischacker (2013, 20), "Kant's point, I believe, is that even as regards empirical facts, we must at some point think hard about which authorities we can reasonably rely on and which we should suspect or reject." Moreover, Kant says that to "accept what appears worthy of belief after careful and sincere examination of facts or rational grounds" is necessary (WDO, AA. 8: 146). Fleischacker (2013, 25) calls this justification based on the grounds of "Kant's cognitive universalization test".

First, it seems appropriate to quote Kant's reductionist allusion to testimony, as discussed by Shieber (2010, 335).

> An open-eyed belief is one that is bound up with an examination of the witness and is grounded in the same. A blind belief, however, is one that accepts a testimony without examination and exploration of the reliability of the same. The former leads to truth, the other, however, is the way to error, and thus harmful, whereas the former is helpful. (V-Lo/Blomberg, AA. 24: 249)

Truth-oriented testimonial beliefs require "examination", and this examination depends on whether the testifier has a trustworthy nature [Glaubwürdigkeit]. Trustworthiness is divided into two categories: competence [Tüchtigkeit] and sincerity [Aufrichtigkeit].[28]

Even if Shieber's argument is applied for sincerity, it does not sufficiently address the "competence" of the testifier, which depends on three specific factors:[29] their ability to experience things as they really are, the absence of defeaters such as drowsiness or distraction, and the ability to narrate facts as they really are (V-Lo/Wiener, AA. 24: 898). We can take others' testimonies as reliable sources of information only after finding sufficient indicators that the testifier has satisfied the following criteria: (1) the ability to observe a particular fact sufficiently, (2) the ability to observe without disturbance, and (3) the ability to precisely report the observations.

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[28] These two elements of trustworthiness are in common with Meier's *Auszug* (1752) §. 207. There are debates on how much Kant was sympathetic to this tradition. For instance, Gelfert (2006: 631) takes Kant's repeated reference to Meier as nothing but superficial. Instead, Scholz (2001: 837) says "Kant essentially agrees with these considerations, although he tries to systematize them and to elaborate their consequences".

[29] There is a profound problem of *mistaken memory* in the present discussion. The truthiness of memory played an essential role in Meier's *Auszug* §. 209: "He must have a good and true memory [Gedächtniss]". However, it is difficult to find an established theory of memory in Kant. Hence, I do not address this issue at the moment. For a succinct explanation of this issue, see Bernecker (2011: 326–34).

Satisfying the third condition—given the grammatical, logical, and rhetorical competence required—takes "practice", which alone limits the number of testimonies worth trusting. Thus, Mikalsen's restriction of reliable sources to "experts" seems plausible. However, the testimony of an eyewitness to an incident is also within the scope of the discussion; thus, the observer need not be an expert, as Kant describes:

> For example, there are many testimonies before a defendant. 1) The crime happened when he was not at home. He really was not at home. This is res facti. 2) Another person saw him at that time. Here the credibility [Glaubwürdigkeit] of the other is the reason. (V-Lo/Wiener, AA. 24: 880)

In this case, when a person testifies about the defendant, the witness need not be a legal expert. Instead, the testifier is often a layperson who is examined by the court for trustworthiness. For example, the eyewitnesses must have been able to see the defendant clearly, not be intoxicated, have the verbal ability to testify to what they have witnessed, and be sincere.[30] Thus, it is better to define trustworthiness in terms of the cognitive capabilities of the testifier, rather than their expertise. This aspect underlies Mikalsen's emphasis on the argument that true propositions are *impersonal*. Impersonality of truth implies universality; true propositions must be equally valid and attestable in others' understanding. It is not necessary fulfill what Fleischacker calls the "cognitive universalization test" in each case personally, given that we are subject to diverse epistemic conditions; however, we should accept the *in-principle possibility* of it, which can thus be renamed as Kant's "universalizability test". Testimony cab be accepted as a reliable source of empirical truth when there are convincing grounds for it, which is accessible by at least one or more hearers who have appropriate cognitive skills.

Since there is some unique epistemic dependency between experts and laypeople, and between primary and secondary cognitive agents, it is pertinent to discuss information transfers between subjects under both equivalent epistemic

[30] The last condition, sincerity, can be met, when the testifier is Kantian, because lying considered to be self-distraction of one's reason. However, even non-Kantian testifiers face the condition of sincerity by the oath in court, when they say, "I do solemnly and sincerely and truly declare and affirm that the evidence I shall give shall be the truth, the whole truth, and nothing but the truth" (The UK Legislation). Kant was aware of this point: "One has to make them [the testifier] attentive by *threats with the oath*. Then they begin to hesitate and become quite doubtful" (V-Lo/Wiener, AA. 24: 898, emphasis mine).

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conditions and under different conditions.[31] In the first condition, suppose experts *A* and *B* are debating on *B*'s discovery, by their public use of reason. If they agree, *A* would have no qualms about taking *B*'s testimony regarding the results of their experiment as true. However, if *B*'s outcome is hard to believe from *A*'s previous experiment or other extant scientific knowledge, *A* would reconstruct *B*'s original experiment, since A too is an expert, operating under the same conditions. *A* would then decide whether to accept *B*'s opinion as true. Furthermore, if *C*, who had the same doubts as *A*, sees that A's retest results are consistent with *B*, *C* would believe *B* and *A* equally. The early entrance of groundbreaking scientific discovery such as Copernican theory and Darwinism provides a good example. These well-known theories were once considered to be highly controversial and unbelievable within religious contexts, but eventually became convincing and widely accepted by natural scientists to date.

Second, suppose a layperson *D* is looking at them. Where all experts are unanimous, *D* would immediately trust the subject without requiring proof.[32] What must *D* do when experts sharply disagree, especially when the testimony of the experts is unbelievable for *D*, or when they are equally contradictory and persuasive, as in the case of antinomies? In such situations, Kant asks, "If, however, the credibility of the witness simply cannot be shaken, but the story or the testimony that he gives contradicts reason and experience in the highest degree, then the question arises, do we have to give approval to his assertion in this case and, as it were, deny our reason, or not?" (V-Lo/Blomberg, AA. 24: 247–8). Requiring proof or evidence is one answer, as suggested by Scholz's "the burden of the proof condition". Similarly, according to Mikalsen (2010, 33), *D* can choose a single opinion as true through the public use of reason. However, in this case, ideally, the first reaction that layperson D should have is to withhold judgment. This is consistent with Kant's answer in the following:

[31] Some argued that the epistemic immediacy is not essential in Kant (cf. Gelfert 2006: 636–7). Kant does admit that someone's testimony and our direct perceptions have equal certainty (V-Lo/Wiener, AA. 24: 891, 896). Moreover, it is still possible that the testifier is much more thoughtful than us concerning the matters in question. Gelfert calls it "Kant's 'symmetry thesis'" (2006: 628, 633). However, Kant notably distinguishes "eyewitness" and "earwitness" and prioritizes the former (V-Lo/Wiener, AA. 24: 900).

[32] There is also an opposite case, testimony that can be denied without any proof. According to Kant, the oracle or the assertion about the divining rod is a good example (V-Lo/Blomberg, AA. 24: 247, V-Lo/Wiener, AA. 24: 896–7).

> The best thing is neither to reject the cognition nor to accept it as true but instead to postpone one's approval until one has more grounds for or against it. (V-Lo/Blomberg, AA. 24: 248)

This passage is related to the fact that holding a proposition to be true amounts to approving it (cf. Meier 1752 §. 168 and 206). In the case of testimony, especially when there is a large gap in epistemic conditions, we must approve the testifier, not only the propositional contents of testimony. This fact has led to the idea that the presumptive principle is founded solely on the moral basis of the trust in others as equals. However, Kant's distinction[33] between believing *something* and believing *someone* does not coincide with the distinction between believing testifiers as reliable *based on their humanity* and believing testimony as true *based on the grounds*. Thus, we need to investigate not the *who and what* of the testimony but *how* that testimonial belief is formed. As Fleischacker (2013, 23) puts it, "Kant's basic rule [the categorical imperative: accept only claims whose grounds you could use universally as a basis of belief] is not aimed at the content of what we believe, but at its form, the grounds on which we believe it". This reflection on *form* alongside withholding judgment underpins egalitarian enlightenment.

Withholding of judgment here means "suspension of judgment for the sake of inquiry, [suspensio judicii indagatoria]" and not merely "renunciation of judgment [renunciatio judicii]." The former is also called "critical suspension", an attitude that critically distances oneself from prejudices, from the tendency to immediately assume something to be true, and is distinct from the mere renunciation of judgment called "skeptical suspension" (V-Lo/Pölitz, AA. 24: 545-6). The subject does care about the proposition *p* but dares to withhold approval in the search for greater certainty. As Kant puts it: "suspension should only serve the purpose of not accepting anything until one has sufficient grounds, but that does not mean that one should reject any and all hope of attaining complete certainty of a thing or a cognition altogether". (V-Lo/Blomberg, AA. 24: 161 and 163; V-Lo/Dohna, 24: 737; V-Lo/Wiener, 24: 885;

[33] Cf. V-Lo/Hechsel 381, V-Lo/Wiener, AA. 24: 893. This distinction is a definition of the historical belief. However, it is important to notice that this is about the difference between rational belief and historical belief. Thus, it does not follow that testimonial belief solely comprises believing someone as rational beings. We can differentiate believing testifiers as reliable on the basis of their *personality* from believing testimony as true on the basis of its *contents and grounds*. Given that Kant says, "I rely (1.) on the statement of others, and (2.) on the experience itself that the third party had" (V-Lo/Wiener AA. 24: 897), it is fair to admit that the "material" belief (V-Lo/Bauch 59) has both connotations.

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Log, 9: 73). The suspension of judgment does not have the effect of turning the communicated knowledge into nothing. Rather, it is the profitable attitude of a critical and autonomous cognitive subject who seeks sufficient grounds to reconsider it independently in light of the laws of understanding. Therefore, layperson *D* should pass judgement only when the appropriate evidence is available. *D* would choose one side in principle—that is, based on the universal accessibility of a particular position that can be proven by additional experiments by several experts—even if they do not have the skills to verify the expert's opinion themselves. In this sense, there is no contradiction between accepting others' testimony as a source of possible truth and withholding one's judgment about it.[34]

As for the nature of the grounds of testimony in Kant, we need to distinguish between the grounding of testimony on the principle of universalizability and the grounding of testimony on the principle of an autonomous subject. This twofold grounding schema enable us to establish which testimony is worth accepting, with a relatively high degree of confidence. In the former, it is crucial to decide whether the testimony is valid to others' understanding, that is, when others testify approvingly on proposition *p*, we should ask if *p* causes the same approbation in our understanding. This is in line with what recent studies called the Kantian "communicability condition"[35] or the "betting test"[36] (A820/B848, A824/B852). For instance, Kant strongly believed that other planets are inhabited, and he was willing to bet his entire fortune on the truth of this proposition (A825/B853). However, such a proposition about a possible fact does not always trigger the same affirmative response. Even for Kant, whether there are inhabitants on the moon or not is to be determined by future empirical, perceptual evidence (A492-3/B521).

Thus, those struggling with whether to agree or disagree with p will have to consider whether there is a primary empirical ground *g* for p. Withholding judgment may be prolonged when one's epistemic condition is far different from that of others. It is still possible to choose an object of approval based on whether ground *g* is "in principle" attainable, namely, whether it is accepted by others' understanding.

[34] Kant suggests that learning how to critically *withhold judgments* is age-relative skill acquisition. We are prone to prejudice at young ages and only when we become mature can we suspend judgment critically. Although it is beyond my scope to discuss such psychological development, it is essential to emphasize that the critical suspension is necessary for our mature, enlightened way of thinking.

[35] See Gelfert 2006: 643ff.

[36] See Stang 2016: 280-1. He puts this test into a question "what would one be willing to wager that *p*?" or "how much would you bet that *p*?" (modification mine).

Drawing on the previous discussion, I formalize the grounding condition for testimony as follows.[37] S's testimony that p counts as a case of reliable empirical information only if ($\exists g$), such that:

(i) *g* is a sufficient subjective ground that S has
(ii) *S*'s assent is directly based on that *g*, and
(iii) If someone else takes *S*'s position, they can also attain the same *g*.

This condition need not be accomplished by individuals; rather, it calls for the *in-principle* universalizability of grounding proof. This condition is supported by the maxims of broad-mindedness and enlightenment, mentioned above. We can trust testimony based on a ground *g* supported by empirical facts attainable by others' understandings. Conversely, the presumptive principle taken by itself does not allow for doubts about others' testimony when it meets the grounding conditions in principle.

These conditions must be considered; nevertheless, we should respect and trust others as being sincere. "Trusting others [vertrauen]" is indeed equivalent to "moral friendship" (MS, AA. 6: 471).[38] However, this does not mean uncritical trust as sometimes it is necessary to point out our friends' mistakes. Thus, we should always consider whether some grounds exist for accepting what they say.[39] The evidence-based approach to testimony can be considered a reductionist interpretation because it examines testimony referring to the empirical and objective facts on which it is grounded.

In contrast, Gelfert (2006, 641) claims, "being 'critical' does neither require nor demand that we be able to construct, by rational argument, a 'positive case' each

[37] One might find it is akin to Dretske and Nozick's "tracking theory of knowledge" (cf. Dretske (1970, 1971, 2003) and Nozick (1981)). Their theory can be summarized as follows. A subject S knows that p is true, just when S tracks *p*'s truth. And S tracks *p*'s truth just when S has an experience *E* such that (1) S's belief *p* is based on S's having *E*, and (2) $\sim P \rightarrow \sim$(S has *E*). Our grounding condition similarly requires that S is traceable to a basic experience which compels him to believe that *p* is true. An important difference is that it does not necessarily require S's accomplishment of the source tracing. Rather, our condition solely calls for the *in-principle accessibility* to that evidence.

[38] The word "trust" certainly has a central importance in Kant's moral philosophy. Namely, having trust in the rational belief makes a moral way of thinking, obedience to moral law, and the attainability of the highest good possible (KU, AA. 5: 471 Anm.). Again, this is all about purely rational beliefs, which is different from trusting others in the empirical realm.

[39] Kant describes this ambivalent relationship quoting Aristotle's aphorism "My friend, no one is my friend!" (MS, AA. 6: 470; Anth, AA. 7: 152).

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time we accept someone's testimony".[40] Although there could be several meanings of the term "positive case", I would argue that Kant's demand for grounds means that we do need fair grounds to make approval possible. Finally, it is worth stressing that the evidence-based approach is compatible with the moral-based approach. The presumptive principle works in harmony with the three principles of *sensus communis*. The evidence-based approach can explain more adequately the nature of the process of empirical knowledge acquisition based on testimonial belief in Kant. In accepting testimony, both theory and practice operate; therefore, Kant's work reflects both reductionism and non-reductionism. This duality is not a theoretical weakness of Kant's epistemology, but rather indicates a possible middle path in this field of research.

5. Conclusions

This study reconsidered the debate on knowledge acquisition from testimonial belief reports, a topic in Kant's epistemology that has attracted much interest in recent years. Specifically, the article outlined how the presumptive principle operates in accepting testimony. I concluded that both the evidence-based and moral-based approaches should be considered to obtain the most plausible and comprehensive account of Kant's argument. Further, we must escape from logical egoism and accept the testimony of others as a reliable source of information. However, we must simultaneously distance ourselves from a slavish epistemic dependence through Kant's three principles of *sensus communis*. Finally, I provided a tentative answer to the question about why the acceptance of testimony relates to the domains of both theory and practice.

The key is the status of testimonial knowledge. As it has been repeatedly highlighted, testimonial knowledge solely concerns empirical matters of fact. Thus, empirical knowledge is not discussed at the level of critical philosophy or metaphysics,

[40] Gelfert draws on the following passages from WDO: "To make use of one's own reason means no more than to ask oneself, whenever one is supposed to assume something: whether one would find it expedient [tunlich] to make the ground on which one assumes something, or the rule that follows from what one assumes, into a universal principle for one's use of reason". (WDO, AA. 8: 146-7Anm.; quoted after Gelfert 2006: 641). However, this quotation seems to indicate an opposite conclusion, namely, requiring "evidence" so that we can reasonably trust someone's testimony. Fleischacker (2013, 22–23) offers a more natural explanation of this point.

but at the anthropological level. This is the reason for the simultaneity of theory and practice. In the real world, the subject of cognition is neither a mere subject of logical judgment nor of action based on the pure practical reason. Instead, human subjects interact in the real world, in which truthfulness and moral good are, in a sense, identical, and we perform various actions based on our tacit knowledge of empirical facts and moral standards. These actions produce not only other empirical facts in its causal chain but also moral consequences. For instance, lying during testimony is not only a logical self-contradiction and a distraction from empirical facts but also a moral violation of sincerity and humanity and it is subject to ethical condemnation.

A detailed discussion of how Kant's theory of testimonial knowledge influences our actions and moral practices lies beyond the scope of this article. However, it is interesting that the extant research has considerably allowed us to discuss the theory of actual communication within the schema of Kant's "enlightenment". Although Kant's enlightenment is considered epistemic individualism, the genuine Kantian enlightenment epistemology has a further implication for the philosophical consideration of the ongoing crisis of trust in this digital age. In today's world, characterized by the increasing specialization of knowledge, manipulation of information, and prevailing fake news, the idea of an epistemology based on Kant's enlightenment may be, perhaps surprisingly, more important than ever before.

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List of Abbreviations

AA		*Akademie-Ausgabe*/Academy-Edition
Anth	1798	*Anthropologie in pragmatischer Hinsicht*/Anthropology from a Pragmatic Point of View (AA. 7)
KpV	1788	*Kritik der praktische Vernunft*/Critique of Practical Reason (AA. 5)
KrV	1781/ 1787	*Kritik der reinen Vernunft*/Critique of Pure Reason (Ph.B)
KU	1790	*Kritik der Urteilskraft*/Critique of the Power of Judgment (AA. 5)
Log	1798	*Jäsche Logik*/*Jäsche* Logic (AA. 9)
MS	1797	*Die Metaphysik der Sitten*/Metaphysics of Morals (AA. 7)
Refl		Reflexion/Kant's Notes and Fragments (AA. 14–19)
V-Mo/Collins		Vorlesungen Moralphilosophie Collins/The Collins Lecture Notes on Moral Philosophy (AA. 27)
V-Lo/ Blomberg		*Logik* Blomberg/The Blomberg Lecture Notes on Logic (AA. 24)
V-Lo/Bauch		*Bauch Logik*/The Bauch Lecture Notes on Logic (Kant 1998a)
V-Lo/Dohna		*Logik Dohna-Wundlacken*/The Dohna-Wundlacken Lecture Notes on Logic (AA. 24)
V-Lo/Hechsel		*Hechserl Logik*/The Hechsel Lecture Notes on Logic (Kant 1998b)
V-Lo/Philippi		*Logik Pilippi*/The Philipii Lecture Notes on Logic (AA. 24)

V-Lo/Pölitz		*Logik Pölitz*/The Pölitz Lecture Notes on Logic (AA. 24)
V-Lo/ Warschauer		*Warschauer Logik*/The Warschauer Lecture Notes on Logic (Kant 1998b)
V-Lo/Wiener		*Vienner Logik*/The Vienna Lecture Notes on Logic (AA. 24)
VRML	1797	*Über ein vermeintes Recht, aus Menschenliebe zu lügen*/On a Supposed Right to Tell Lies from Benevolent Motives (AA. 8)
WA	1784	*Beantwortung der Frage: Was ist Aufklärung? /*An Answer to the Question: What Is Enlightenment? (AA. 8)
WDO	1786	*Was heißt sich im Denken orientiren? /*What does it mean to orient oneself in thinking? (AA. 8)

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Editorial Notes

The special theme of the present volume, “Philosophy of Catastrophe” was decided by the initial Working Group, which was formed to create this journal, but it was not me who suggested it. I myself am not so well versed in the genealogy of the “philosophy of catastrophe”. To begin with, the terms such as “field” or “domain” seem inappropriate when it comes to this philosophical research. Even if the problems of the “catastrophe”, the “crisis”, the “risk” or the “uncertain” have been traditionally and constantly argued about by philosophers, the accumulated knowledges cannot yet be said to constitute a particular scholarly field or domain of “philosophy of catastrophe”. This philosophy would certainly seek to tackle the difficult phenomena of catastrophe in real life and not be content with being confined to theory.

These circumstances may account for the extremely limited number of entries for this volume. Accordingly, this volume carries only the invited articles within the part “I Special Theme”. We have the honor of publishing four articles of representative researchers which were selected as a way of fulfilling this “Special Theme”. Each of them clarified admirably the contemporary problem of catastrophe and, to put it concretely, that of the nuclear problem from her/his proper perspective.

Professor Jean-Pierre Dupuy, the leading figure and worldwide well-known expert of the “nuclear deterrence” contributed his exceedingly profound speculation. The articles which were written by two young scholars, Professor Orietta Ombrosi and Professor Nicolas Prignot can assure us that they are now forming the research field of “philosophy of catastrophe”. And Editorial committee is deeply grateful to our President of the Philosophical Association of Japan, Professor Ichinose Masaki for the essential article for this volume as a part of his significant reflection and investigation on “Risk, Precaution, and Causation”.

Tetsugaku Vol. 6 came to be published with the acutely actual theme, “Philosophy of Catastrophe”, given the worldwide situation where pandemic, disasters, and wars, one after another, haunt us.

For this volume, we invited as a guest editor from outside of the Philosophical Association of Japan, Tonaki Yotetsu, a scholar who takes on the opening of this new philosophical field of the catastrophe, for whose support we are greatly thankful. Surely this issue could never have been realized without deputy editors, Jeremiah Alberg and Nishimura Seishu’s faithful support, Shirakawa Shintaro and the other

editorial committee members' sincere help. We would like to acknowledge Jeremiah and Shintaro for their kind advice in the details of editing the works. In conclusion, we appreciate very much Sova P. K. Cerda for his meticulous revisions of English expressions within several articles.

Kyoto, October 2022, Chief editor, Uehara Mayuko

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Call for Papers for Tetsugaku Vol.7, 2023

Special Issue: "Philosophical Practice"

Tetsugaku – International Journal (e-journal) of the Philosophical Association of Japan, calls for papers for the special issue, "Philosophical Practice" (Vol.7, 2023)

In Japan, the term "Philosophical Practice" is used as an umbrella term based on Matthew Lipman's Philosophy for/with Children (1970s) in conjunction with Gerd Achenbach's Philosophical Counseling (1980s) and Marc Sautet's Socrates Cafe (1990s). They are activities that have different historical roots, theoretical background and aims, but what they share in common is that all of them are focusing on non-experts' engagement in philosophical activity.

Since the beginning of this century, we have been witnessing a growth of philosophical practice across Japan especially in the field of education and civil society, conducted in various forms including philosophical inquiry in school and philosophy cafés, etc. Echoed by such growing public recognition of philosophical practice, the Japanese Society for Philosophical Practice was established in 2018 to further the movement of philosophical practice in Japan.

Broadly construed, philosophical practice is a philosophical and communicative practice going beyond the boundary between experts/non-experts in philosophy, where people (including philosophers, academics, non-academics, children etc.) jointly engage in dialogical activity for inquiring into their common question. In philosophical practice, people are treated as equals before the question they are investigating. These practices are philosophical "practice" often conducted by people with no academic philosophy background. Viewed in this light, however, what is the meaning of "philosophy" in the context of the "philosophical" practice? Thinking about philosophical practice inevitably requires us to engage in a self-reflective inquiry on what philosophy is and ought to be, thereby enabling us to delineate the contour of philosophy.

In the incoming special issue on "philosophy of philosophical practice", we welcome a wide range of contributions to the field of philosophical practice. The foci of the special issue include, but are not limited to:

What is philosophical practice and what is not?
Who is the philosophical practice for?
Can non-academic philosophers or children do philosophy?

In what sense can philosophical practice produce a caring and therapeutic effect?
What is the meaning of the professionality of philosopher and/or philosophical practitioner?
What is the ethics of philosophical practice?
What are the roles of academic philosophers in a philosophical inquiry?
What is the relationship between dialogue and philosophy?
How can philosophy of dialogue relate to philosophical dialogue?
(Buber, Levinas) How can/should philosophy relate to civil society?
How can/should philosophy contribute to education?
How can philosophical practice contribute to consensus/dissensus making in the public sphere? How inclusive can philosophical practice be?
Can philosophical practice take up the voices of the minorities?
Is philosophical practice possible in an unusual and/or deeply divided situation?
What is the mission of philosophical practice in global society?
What is the role of philosophical practice amid catastrophes, pandemic, and Anthropocene?

[Deadline: 30 October 2022]

To submit your paper, please carefully read our Guidelines for Contributors.

Submission guidelines are available at
https://philosophy-japan.org/en/international_journal/guideline-2/