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Is Nuclear Anarchy Sustainable? A Temporal Approach[1]

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Abstract. This article develops a novel temporal approach to the sustainability of nuclear anarchy. The existing literature offers two opposite perspectives on the topic: some scholars argue that nuclear anarchy is unsustainable, since it will inevitably either lead to a catastrophic nuclear war or evolve into a hierarchical world order. Their opponents doubt the inevitability of nuclear war in a system of sovereign states and/or its catastrophic nature. However, the debate, as it stands now, ignores the fact that both technology and social structures are embedded in – and mediated by – cultures and worldviews. In particular, both nuclear weapons and inter-state anarchy are embedded in specific temporalities.

Taking this embeddedness into account, we identify and compare perceptions of time that are interrelated with nuclear weapons, on one hand, and international anarchy, on the other. The article reveals a temporal contradiction of nuclear anarchy: while nuclear weapons imply a potential finitude of humanity, the system of sovereign states is intrinsically connected with an indefinite temporality. We derive two theoretical implications from the concept of temporal contradiction. First, the realization of finite temporality will subvert the legitimacy of an anarchic world order and encourage limitations on national sovereignty. Second, international anarchy will "eternalize" nuclear weapons, i.e., reinterpret them as compatible with the eternity of human civilization. Familiar events in nuclear history, including early attempts to establish international control of nuclear energy, the Strategic Defense Initiative, and the evolution of the anti-nuclear movement are interpreted here as empirical evidence in favour of the theoretical implications described above.

Thus, the concept of temporal contradiction provides another argument for the idea that nuclear anarchy is unsustainable in the long run, since the proliferation of the finite temporality leads to international hierarchy, whereas persistent indefinite temporality masks the severity of the nuclear threat, making nuclear war more conceivable and probable.

Keywords: temporality; nuclear weapons; international anarchy; sovereign state; nuclear war; global threats; temporal contradiction.

[1] English translation from the Russian text: Uchaev Ye. I., Kvartalnov A. A. 2022. Temporal'nyi podkhod k probleme ustoichivosti iadernoi anarkhii. *Vestnik MGIMO-Universiteta* [MGIMO Review of International Relations]. 15(6). P. 112–134. https://doi.org/10.24833/2071-8160-2022-olf3

Doubts about the stability of a world in which international anarchy and nuclear weapons coexist arose immediately after nuclear weapons first appeared. Einstein's oft-quoted claim that the Fourth World War would be fought with "rocks" clearly pointed to the threat:[2] a new war would become a global catastrophe, and long-term peace was something that had never been achieved in the system of sovereign states. The Russell–Einstein Manifesto published six years later stated the problem directly: "Here, then, is the problem which we present to you, stark and dreadful, and inescapable: Shall we put an end to the human race: or shall mankind renounce war? People will not face this alternative because it is so difficult to abolish war. The abolition of war will demand distasteful limitations of national sovereignty."[3]

At the same time, humankind has now been living in a state of nuclear anarchy for over 75 years, and while we have teetered on the edge of the abyss on numerous occasions, a single step from oblivion, no one has ever taken it. It would also be wrong to say that the threat has been growing constantly – rather, its dynamics more closely resemble a sine wave, with the cyclical alternation of periods of escalation and de-escalation.[4] The idea that "nuclear war cannot be won and must never be fought" was officially proclaimed, and recently reaffirmed, by the leaders of the two largest nuclear powers.[5] Does this mean that the gloomiest predictions turned out to be unjustified, and states have learned to live with the nuclear bomb? Or do the crises that spring up from time to time speak to the continuing unacceptable risk, and that, in the long run, the choice remains the one between the collective suicide of humanity and the movement towards the supra-nationalization of international politics?

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[2] Einstein reportedly made this comment during an interview published in 1949, that is, four years after the first ever nuclear test. See: Einstein A., Calaprice E. 2011. *The Ultimate Quotable Einstein.* Princeton: Princeton University Press. P. 280.

[3] Russell–Einstein Manifesto, 9 July 1955. *Pugwash Conferences on Science and World Affairs.* URL: https://pugwash.org/1955/07/09/statement-manifesto/ (accessed: 25.11.2022).

[4] The sine waves peaked, for example, during the 1962 Cuban Missile Crisis, the Able Archer 83 exercises, and the 2022 Ukrainian crisis. Note that we are not implying here that the risk of nuclear weapons use was equally high in all three cases. In 1962 and 1983, the nuclear forces were put on high alert (see, for example, Downing 2020: 198-226). During the Cuban Missile Crisis, John F. Kennedy estimated that there was a 33–50% chance of nuclear war (See: Nye J. S. Is nuclear war inevitable? *The Strategist – ASPI Blog.* URL: https://www.aspistrategist.org.au/is-nuclear-war-inevitable/ (accessed: 26.11.2022)). Similar steps were not taken in 2022. Nuclear escalation of the Ukrainian conflict remains unlikely, although it is a far more realistic prospect than it has been at any point during at least the past 30 years. For the purposes of our argument, it is precisely this increase in nuclear risk in 2022 compared to the previous period that is significant (see: Stefanovich D. Special Warheads and the Special Military Operation. *Russian International Affairs Council.* 28.06.2022. URL: https://russiancouncil.ru/en/analytics-and-comments/analytics/special-warheads-and-the-special-military-operation/ (accessed: 26.11.2022); Trenin D. V. Approaching the End of the Line. Kommersant. 12.10.2022. URL: https://www.kommersant.ru/doc/5608400 (accessed: 26.11.2022) (in Russian); Nuclear Factor in the Ukrainian Conflict (IMEMO Analytical Report). 2022. URL: https://www.imemo.ru/en/news/events/text/analiticheskiy-doklad-imemo-ran-yaderniy-faktor-v-ukrainskom-konflikte (accessed: 26.11.2022)).
If Doomsday Clock readings are used as an estimate of the probability of nuclear war, then the years in which the threat hit its peak will be slightly different: 1953–1959, 1984–1987, and 2020–present, although the overall dynamics will still be cyclical. See: The Doomsday Clock Timeline. *Bulletin of the Atomic Scientists.* URL: https://thebulletin.org/doomsday-clock/timeline/ (accessed: 26.11.2022).

[5] Joint Soviet–United States Statement on the Summit Meeting in Geneva. November 21, 1985. *The American Presidency Project.* URL: https://www.presidency.ucsb.edu/documents/joint-soviet-united-states-statement-the-summit-meeting-geneva (accessed: 25.11.2022); U.S.–Russia Presidential Joint Statement on Strategic Stability, June 16, 2021. *President of Russia: Official Website.* URL: http://en.kremlin.ru/supplement/5658 (accessed: 25.11.2022).

Existing approaches to the sustainability of nuclear anarchy usually analyse the relationship between nuclear weapons (technology) and international anarchy (social structure) directly. This overlooks the fact that, in human societies, both technologies and social structures and, this is especially important, the interactions between them are embedded into a common cultural and ideational framework and are mediated by this framework. In the context of nuclear weapons, *temporality* – that is, ideas about the nature of time and the direction in which it flows – is the most interesting cultural dimension of reality (Allan 2018: 11). A number of works have already pointed to the fact that the emergence of nuclear weapons requires us to re-evaluate our ideas about time itself (Mandelbaum 1981: 228–229; Burke 2016; Hamilton 2018), although the issue of the sustainability of nuclear anarchy is not directly posed in them.

Developing this area of research, we propose adopting a temporal approach to the issue of the sustainability of nuclear anarchy. Within the framework of this approach, the research question can be formulated as follows: *Is the concept of time necessary to prevent a nuclear catastrophe (a full-scale nuclear war) compatible with the preservation of an anarchic system of sovereign states?*

Our hypothesis is that they are incompatible: international anarchy exists in indefinite temporality, while avoiding nuclear war requires an awareness of the potential finitude of human time, and finite temporality, in turn, creates objective incentives for the transition to a hierarchical, supranational political system. We believe that this ***temporal contradiction*** is an important additional argument in favour of the long-term instability of nuclear anarchy.

The present paper consists of five sections. The following (second) section gives a brief review of existing approaches to the issue of the sustainability of nuclear anarchy. The third section goes into greater detail on the temporal approach: we identify and compare ideas about time connected with nuclear weapons, on the one hand, and with international anarchy, on the other. In the fourth section, we test the theoretical expectations arising from the temporal approach in order to determine the degree to which they align with the history of international relations in the field of nuclear weapons. The fifth and final section discusses the results in the context of existing approaches.

The Sustainability of Nuclear Anarchy: For and Against

First of all, we should clarify the terminology we will be using in this paper. What do we mean when we say "nuclear anarchy"? The term "nuclear" does not necessarily refer to the actual existence of nuclear weapons, as it can also refer to the availability of the necessary knowledge and technical abilities to build such weapons within a realistic timeframe. In other words, a hypothetical nuclear disarmament does not mean the world would cease to be "nuclear" in the sense of the word that we are using. In turn, "anarchy" is typically understood as the antonym of "hierarchy," that is, as a socio-political organization in which there is no supreme authority over a multitude of

autonomous subjects (Waltz 1979: 88–93). Moreover, we are, of course, talking about inter-state anarchy, and thus the concepts of "anarchy" and "system of sovereign states" will be used interchangeably in this article. Accordingly, the hierarchy in this paper refers specifically to the emergence of a higher (supranational) authority over states, and not a simple division of states into strata from "great" to "small" powers.[6]

Further, by "sustainability," we mean the system's capacity for long-term reproduction over time, that is, the absence of serious internal contradictions in the system that would lead to its irreversible self-destruction and/or radical transformation. By introducing the problem of the "sustainability of nuclear anarchy," we thus ask: Is there an *irresolvable contradiction* between the two characteristics of the modern world – between its "anarchy" and "nuclearity"?

As we mentioned in the introduction, the thesis on the unsustainability of nuclear anarchy was introduced shortly after the appearance of nuclear weapons, e.g., in the Russell–Einstein Manifesto, which directly posited the choice between the "limitations of national sovereignty" and the "end [of] the human race."[7] However, few defend this thesis today (for those who do, see: Craig 2019; Deudney 2019), and the prevailing attitude among experts is that the anarchic world order and nuclear weapons are indeed compatible.

The argument put forward by those who adhere to the thesis on the unsustainability of nuclear anarchy is quite simple:[8] "The combination of [international] anarchy and [nuclear] arsenals portends an eventual nuclear war, if one accepts the standard definition of anarchy as precisely a condition in which major war is possible" (Craig 2019: 350). Nuclear war would, in turn, mean "a sudden civilizational *crash*" (Deudney 2019: 381). Thus, the justification of the thesis can be presented in the form of the following causal chain: the anarchic nature of relations between nuclear powers will inevitably lead them to war; this war will inevitably turn into a nuclear confrontation (if it is not one from the get-go); and, finally, a nuclear war would mean, at the very least, the complete collapse of modern socio-political structures (including the system of states), and at worst, the extinction of humankind. Schematically, it looks like this:

(1) NUCLEAR ANARCHY → WAR → NUCLEAR WAR → COLLAPSE OF THE SYSTEM OF STATES

[6] We thus use the concept of "hierarchy" in a narrower and more formal sense (closer to Kenneth Waltz) than it is used, for example, in the influential work of David Lake (see: Lake 2009).

[7] Russell–Einstein Manifesto, 9 July 1955. Pugwash Conferences on Science and World Affairs. URL: https://pugwash.org/1955/07/09/statement-manifesto/ (accessed: 25.11.2022).

[8] For the sake of brevity, we will call this the "unsustainability thesis," and the opposite point of view the "sustainability thesis."

An alternative to this scenario is the radical transformation of the world order involving the rejection of anarchy. It is here that the opinions of experts as to what would come next vary: from a full-blown world state (Craig 2019) to a limited supranationalism covering nuclear arms control only (Deudney 2007: 254–264; Deudney 2019: 378–382). However, the general logic remains:

(2) NUCLEAR ANARCHY → AWARENESS OF UNSUSTAINABILITY → TRANSITION TO A NON-ANARCHIC WORLD ORDER

One way or another, nuclear anarchy – according to those who adhere to this point of view – will disappear either in the course of global reform, or in the fire of global war, and it is thus unsustainable.

Logically, proponents of the thesis on the *sustainability* of nuclear anarchy dispute one or more of the steps in the causal chains from scheme 1. They may argue that: a) anarchic relations between nuclear powers do not necessarily lead to war; b) a war between nuclear powers does not necessarily turn into a nuclear one; c) a nuclear war would not necessarily lead to the complete collapse of civilization.

The first line of argumentation could include, for example, reference to the theory of "nuclear revolution." According to this theory, the mutually assured destruction, making victory in a large-scale military conflict impossible, has led to revolutionary changes in state strategy – now the focus is on ensuring peace in relations between great powers, maintaining the *status quo,* and preventing crises (Jervis 1989: 1–41). At the same time, the state has effectively remained unchanged as a political structure, and, consequently, so too has inter-state anarchy. In the more commonly accepted interpretation, specialized arms control institutions are required to maintain the peaceful nature of nuclear anarchy (Deudney 2007: 252–254; Arbatov 2021). However, Kenneth Waltz offers a more radical analysis: nuclear deterrence works automatically, even if it is not propped up by relevant international regimes (Waltz 1990).

An example of the second line of argumentation can be found in Alexei Fenenko's argument, which is based on the fact that chemical weapons were not deployed during the Second World War. According to this logic, two countries' possessing nuclear weapons does not necessarily prevent an armed conflict between them from breaking out, but it does effectively prevent the conflict from escalating to the nuclear level. In other words, the very existence of nuclear weapons guarantees their non-use (Fenenko 2019).

Finally, the third line of argumentation in favour of the sustainability thesis has two variants: 1) the concept of a limited nuclear war that does not develop into a full-scale one, and in fact serves to prevent further escalation (Kahn 1965; Bogdanov 2022: 6–9); and 2) the idea that the consequences of a full-scale nuclear war might not be catastrophic (Kahn 1960).[9]

[9] See also: Alekseev V. The Myth of Nuclear Deterrence. *Russian International Affairs Council.* 15.03.2019. URL: https://russiancouncil.ru/analytics-and-comments/columns/military-and-security/mifyadernogo-sderzhivaniya/ (accessed: 25.11.2022). (In Russian).

We should also mention the constructivist approaches, which have recently gained more ground. The idea here is that it is possible to either ensure the sustainable non-use of nuclear weapons through the widespread introduction and internationalization of relevant norms (Tannenwald 2007), or abandon nuclear weapons altogether by gradually delegitimizing them (Ritchie 2013). However, these approaches also turn out to be versions of the sustainability thesis, since both imply the fundamental compatibility of the measures they propose with the preservation of the state and system of states.[10] This is confirmed by the practical application of constructivist approaches in the form of the initiative on the prohibition of nuclear weapons on humanitarian grounds, culminating in the signing and ratification of the Treaty of the Prohibition of Nuclear Weapons (Makhukova 2016; Tuzmukhamedov 2021). This initiative proceeds from the idea that it is possible to prohibit nuclear weapons on moral and legal grounds within the existing system of states (Ruzicka 2019).

All of the arguments put forward by the proponents of the sustainability thesis that we have discussed here can be countered. For instance, existing assessments of the consequences of a full-scale nuclear exchange between Russia and the United States call into question the assertion that a no-holds-barred nuclear war would not be catastrophic: five billion deaths over the course of two years (Xia et al. 2022), which, of course, is not the extinction of the entire human race, but it is a catastrophe of sufficient proportions to assert that whatever remains would no longer be a system of sovereign states in any meaningful sense.[11] In turn, the idea of a limited nuclear war is conceptually weak due to the fact that "the escalation potential of signalling strategies is great, and no tools for managing escalation – except for the shaky presumption that the players will act calmly and rationally in a crisis – have been proposed" (Bogdanov 2022: 11).[12]

Further, the argument from the non-use of chemical weapons fails to take a number of significant differences between the two situations into account, specifically the absence of first-strike strategies in the case of chemical weapons in the interwar period. In the case of nuclear weapons, the impossibility of eliminating such strategies completely is one of the main destabilizing risks (Lieber, Press 2017). The reliance on

[10] The exception here is Alexander Wendt's theory of the world state (Wendt 2003), according to which the awareness of the threats arising from the condition of nuclear anarchy is one of the factors (albeit not the main factor) in the transition to a global political hierarchy.

[11] Five million is the estimated number of deaths from starvation alone, ignoring the other negative consequences of nuclear war. Other recent studies of the climatic consequences of a nuclear war give generally similar predictions: a sharp decrease in the Earth's temperature over the course of several years, leading to the almost complete collapse of agriculture and mass starvation (Robock, Oman, Stenchikov 2007; Coupe et al. 2019). The most common point of view today is that a full-scale nuclear war would be a global catastrophe, signifying the end of modern civilization in both the socio-organizational and the technological sense, but it would nevertheless not lead to the complete extinction of the human race (Scouras 2019; Ord 2020: 90–102). While this last scenario cannot be ruled out, it is generally seen as a worst-case one that is extremely unlikely.

[12] This presumption, which places extremely high requirements on the parties in terms of the rational and correct interpretation of the enemy's intentions and calculation of one's own steps in the context of an unfolding exchange of limited strikes, has been criticized already by Hans Morgenthau (Morgenthau 1964: 25–30).

"automatic" deterrence is undermined by the paradoxical nature of nuclear strategy, as "nuclear deterrence tends to self-destruct both from within (via the concept of a limited nuclear war) and from without (in the course of the technical and operational entanglement of nuclear and conventional weapons, and through automatization of command-control systems)" (Arbatov 2021: 106). Finally, arms control and the norms of the non-use of nuclear weapons do not exist in a vacuum, but rather depend on the broader international political context and, as a result, are subject to erosion in the context of crises in relations between nuclear powers (Tannenwald 2018; Arbatov 2021: 109).

With all that said, these arguments only demonstrate the *possibility* of a catastrophic nuclear war in the conditions of international anarchy, not its inevitability. One way to move from a statement of possibility to a statement of inevitability (which is necessary to fully justify the thesis on the unsustainability of nuclear anarchy) is through the accumulation of probability. If we assume that the probability of a nuclear war in any given year is 1%, and that it is independent of the probability of a nuclear war in any other year, then, according to the probability theory, the risk of nuclear war breaking out over a given number of years will be determined by the formula:

$$1 - (1 - p)^n,$$

where n is the number of years, and
p is the probability of nuclear war breaking out over the course of one year.

In this case, the probability of a nuclear was breaking out within a hundred-year period is 63.4%. However, if we assume that the probability of nuclear war is 1% in the first year and then decreases by 80% with each subsequent year, then its cumulative probability for all time period will be just 5% (Nye 1988: 21). Most likely, both assumptions are equally implausible. Empirically, we see neither a complete independence of the probability of nuclear war of one year from any other, nor a consistent risk reduction. As we noted in the introduction,[13] more or less cyclical fluctuations occur in the level of risk, which, again, prevents us from making any definitive conclusions: perhaps the upward trajectory of the wave will, sooner or later, peak at the onset of a catastrophe, or perhaps the fluctuations will continue indefinitely.

Thus, in its current form, the discussion of the sustainability or unsustainability of nuclear anarchy remains essentially open and contested. In this situation, it is particularly worthwhile to introduce new approaches that have not been used in this discussion and which may allow us to consider the issue in a new, and perhaps unexpected, light. We thus propose the temporal approach – the consideration of temporalities (concepts of time) with which nuclear weapons on the one side, and the system of sovereign states on the other, are interconnected.

[13] See footnote 4 above.

The Temporal Approach: The Time of Nuclear Weapons vs. the Time of Anarchy

The issue of the sustainability of nuclear anarchy is one of the nature of the relationship between material artefacts (nuclear weapons) and the form of social organization (the system of sovereign states). At the same time, neither material artefacts nor social forms exist on their own; they are always embedded into certain cultural and ideational systems, or simply "cultures."[14]

Individual elements of this argument are well known and have been sufficiently elaborated in the theory of international relations. For instance, ideational mediation of the causal impact of material reality is one of the central tenets of constructivism. A textbook example of this is the very different attitudes of the United States to British and North Korean nuclear weapons, as the United Kingdom is seen as a "friend," and North Korea an "enemy" (Wendt 1995). The constitutive dependence of international institutions on certain cultural ideas – for example, cosmologies (Allan 2018) or values (Reus-Smit 1999) – has also been described on numerous occasions.[15]

We sometimes encounter (most often in critical theory and historical sociology) a simultaneous analysis of all three dimensions of international reality – the material, the social and the cultural (ideational) (see, for example: Cox 1981: 135–137). However, this approach usually treats all three dimensions as equal, and the special status of the cultural dimension is overlooked as a result: not only does it interact with the social and the material, but *it also largely mediates the interaction between these two dimensions.* It is this culture-centric analysis that we propose to apply in our consideration of the issue of the sustainability of nuclear anarchy.

The question is: *Are the cultural beliefs that are necessary to prevent all-out nuclear war consistent with maintaining the social form of a sovereign state (and thus international anarchy)?* Of the entire cultural dimension of reality in the context of nuclear weapons, it is temporality – ideas about the nature of time and the direction in which it flows (Allan 2018: 11) – that is of most interest to us. Numerous studies have drawn attention to the relationship of nuclear weapons with certain ideas about time (Mandelbaum 1981: 228–229; Burke 2016; Hamilton 2018),[16] although none of them used the theoretical framework outlined above and which we believe to be the most productive.

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[14] If we understand "culture", following Clifford Geertz, as a system of meaning that organizes social action (Geertz 1973).

[15] The conclusions of these studies are consistent with those of cultural anthropologists, namely, that forms of social organization (institutions) are not culturally neutral, "empty forms." Rather, they reflect, embody and reproduce certain values, symbols and worldviews (Douglas 1986). Consequently, changing the cultural "content," as a rule, requires a parallel transformation of social "forms," and vice versa: "… to rework the pattern of social relationships is to rearrange the coordinates of the experienced world" (Geertz 1973: 28).

[16] Although their number is still surprisingly low, especially given the recently announced "temporal turn" in international studies (Hom 2018). That works on international political temporality largely ignore nuclear issues can be partly explained by their predominantly being metatheoretical or methodological in nature – that is, they analyse the temporal premises of existing theories of international relations (Hom 2020; Hutchings 2008; Hutchings 2018), rather than the influence of ideas about time on international political practice.

The earliest, and at the same time most theoretically primitive example of the issue of nuclear anarchy being considered through the prism of temporality is found in the work of Michael Mandelbaum (Mandelbaum 1981: 228–229). In his studies, Mandelbaum draws attention to the psychological incompatibility of nuclear weapons with the Western linear concept of time and then suggests returning to traditional cyclical temporality. However, he dismisses the significant influence that ideas have on socio-political and material processes (Mandelbaum 1981: 1–7): for him, the likelihood of a catastrophic nuclear war stems from the "objective" interaction of the materiality of nuclear weapons and international anarchy as a form of political organization of the world. All ideas can do is reflect our objective reality more or less correctly. As a consequence, Mandelbaum saw cyclical temporality as more appropriate not for preventing nuclear war, but for reconciling people with its the possibility (Mandelbaum: 228–229).

In turn, we are interested in the impact that ideas have on the *prevention* of a nuclear catastrophe, since we proceed from the fact that ideas, including those about time, have a causal influence on material and social processes. We can thus make the question posed above more specific: *Is the concept of time that is necessary to prevent all-out nuclear war compatible with maintaining the anarchic system of sovereign states?*

The relevant literature gives us opposing views on this issue. Anthony Burke emphasizes the incompatibility of the finite temporality[17] of nuclear weapons with existing nuclear strategies (deterrence and "winning a nuclear war"), which are based on the idea of indefinite time (in its cyclical and linear-progressive variants, respectively) (Burke 2016). In turn, the policy of complete nuclear disarmament corresponds to the temporality of nuclear weapons, to which Burke proposes we move (Burke 2016: 89). At the same time, it is implicitly understood that such a policy can be implemented within the framework of a system of sovereign states.[18] Conversely, Scott Hamilton emphasizes the fact that the finite temporality of the Anthropocene epoch[19] contradicts the indefinite time of the Foucauldian governmentality and the modern state (Hamilton 2018). And if it does, then it leads to their being undermined, to their transformation into something else. We should note here that Hamilton overlooks the reverse influence of social forms (the system of states) on culture (temporality), which can lead to the conservation of "old" ideas even in a new material context.

Our approach is closer to the Hamilton's one. Considering the assessments given in footnote 11, the emergence of nuclear weapons requires an understanding of the fact that the time of humankind is potentially finite: nuclear weapons can be piled up in such quantities and used in such a way that they could put an end to the existence

[17] We treat the temporality of nuclear weapons as finite, as, according to Burke, they are capable of bringing an end to the human race's time on this planet.

[18] We can, of course, say that Burke simply ignores this issue. However, it would seem that, in this case, not stating directly that anarchy must be overcome can be interpreted as an implicit agreement with the opposite opinion.

[19] On the connection between the onset of the Anthropocene epoch and the development of nuclear weapons, see: (Burke 2016: 86–87; Van Munster 2021; Uchaev 2021: 7–9).

of human civilization.[20] At the same time, we believe that the spread of finite temporality of nuclear weapons is incongruous with the preservation of international anarchy, since the latter is based on the opposite – indefinite – kind of temporality.

Michel Foucault was among those who described the connection between the modern state and indefinite temporality. Analysing the treatises on the art of government of the late 16th to the early 17th centuries, he notes that, according to them, the state "will not even have to pursue something like the end of history, either as a fulfilment or as the point at which historical time and eternity join together" (Foucault 2009: 260). Foucault goes on to summarize: "A new historical perception forms that is no longer focused on the end of time and the unification of all particular sovereignties in the empire of the last days. It opens onto an indefinite time in which states have to struggle against each other to ensure their own survival" (Foucault 2009: 365). At the conceptual level, Foucault's theses here are consistent with Bruno Latour's idea of Modernity. According to Latour, Modernity is a post-apocalyptic era, that is, an era that conceived itself as the achieved end of history, freeing itself from the expectation that radical transformations are yet to come (Latour 2017: 184–219).[21]

The relationship between different temporalities, finite and indefinite, and alternative forms of political organization – hierarchical–universalist (empire) and particularistic (state), respectively – postulated by Foucault is also confirmed by empirical research.[22] Eschatological visions of the impending end of the world have historically served to legitimize imperial projects, from Byzantium and the early Islamic caliphate (Shoemaker 2018) to the empire of Charlemagne (Gabriele 2011: 97–128)[23] and the Holy Roman Empire (Arnold 2003) until the late Middle Ages (Kneupper 2016). In turn, the sovereign states of modern times have always been accompanied by ideas about time being unlimited in the future, even if these ideas changed from cyclical to linear-progressive (Allan 2018: 108, 143–148). When reflecting on the position of their countries in history, state leaders could resort to various specific concepts – from a radical break with the past to an unchanging stasis (Clark 2019) – but they all imply indefinite temporality. In absolutist France and early modern England, apocalyptic prophecies were explicitly forbidden, since the "existence [of the state] depended upon the elimination of millenarian expectations" (Koselleck 2004: 16–17, 21).

[20] Thus, we take the thesis about the catastrophic consequences of a full-scale nuclear war as a given. However, this seems to be the least controversial dimension of the discussion about the sustainability of nuclear anarchy.

[21] For more on the self-perception of Modernity as a post-apocalyptic era, and specifically on how this self-perception is reflected in international political theory, see: (Uchaev, Kharkevich 2023).

[22] We should point out here that all the works cited below refer to political forms in societies of the Abrahamic religions (Judaism, Christianity and Islam). Other civilizations, such as those is China, ancient Egypt and the pre-Christian Roman Empire, demonstrate numerous examples of imperial (hierarchical–universalist) political structures with indefinite temporality.

[23] See also: Van Meter D.C. 1997. *The empire of the year 6000: Eschatology and the sanctification of Carolingian politics*. [Doctoral Dissertation]. Boston University.

This dependence has an abstract and logical justification: the modern state is both territorially limited and sovereign (Kaspe 2008: 124–127; Skinner 1978: 349–352). In other words, it sees itself as one of many political actors, while at the same time professing full independence in its actions and recognizing the right of others to the same independence. Such sovereign isolation becomes legitimate and justified if the actors do not have any idea of a "common destiny" that requires them to come together and act collectively (Wendt 1999: 349–353). Consequently, as long as Christian Europe had a common destiny in the form of the forthcoming "end of times," the state could not establish itself as the dominant political form.

As for the reverse effect – the reproduction of indefinite temporality on the part of the state – it can be observed both directly and indirectly. The direct influence of states on people's ideas about time is manifested in the politics of memory. The state seeks to construct a sense of its own immortality, projecting itself deep into history. For instance, the events of the Second Punic War between Rome and Carthage that took place in the Iberian Peninsula have been "appropriated" by the Spanish state and people as a part of their history (Ferro 2003: 139). Alternatively, the state, in the Hegelian spirit, positions itself as a logical consequence and the highest point of all the previous historical development, a point that cannot be surpassed by anything (Van Creveld 2019: 242–244). In both cases, indefinite temporality is articulated.

Indirectly, the indefinite perception of time is created by the very structure of social life in the state. The state virtually lays claim to a kind of sacred status: to be the highest value for its own citizens, demanding they behave correspondingly – for example, cultivating a willingness to "die for the Motherland" (Kaspe 2021: 183–188). And it does so rather successfully: from at least the start of the 19th century, "… the state now appropriated for itself the right to claim the highest sacrifice from its members" (Van Creveld 1999: 205). Such sacralization of the particular implies that the general – the world and humanity as a whole – is seen as unproblematic and unconditionally given, guaranteed. Living in a state and ascribing it the highest value, citizens thus always implicitly reproduce the idea of the eternity of the world of states.

Finally, the nature of the functioning of the anarchic system of states also contributes to the reproduction of indefinite temporality: it would appear that nothing qualitatively new arises or develops within it, rather, competition between states merely repeats itself in accordance with the logic of the balance of power, or cycles of hegemony (Hobson 2002: 5–15).[24]

[24] Historical studies of international relations that are critical of the mainstream convincingly expose the illusory nature of such an ahistorical perception (see, for example: Teschke 2003; Buzan, Lawson 2015). What is important for us, however, is the very fact that such ideas emerged in the first place and became so popular.

Temporal Contradiction and its Consequences

Now, the emergence of nuclear weapons requires an awareness of time as potentially finite, while the system of sovereign states relies on (and reproduces) indefinite temporality. It logically follows from this that there must be a ***temporal contradiction*** between nuclear weapons and inter-state anarchy. If this conclusion is correct, then the following consequences should be observed in practice: 1) understanding the finite temporality of nuclear weapons will lead to attempts to limit sovereignty; and 2) in the conditions of persistent international anarchy, there will be a rethinking of nuclear weapons as compatible with the eternity of time – the "eternalization" of nuclear weapons, as we propose to call this phenomenon.

The first expected consequence was visible, for instance, in the knee-jerk reaction to the appearance of nuclear weapons in the form of attempts to place them under strict international (or, more precisely, supranational) control (Baratta 1985). The Report on the International Control of Atomic Energy (commonly referred to as the Acheson–Lilienthal Report) – an important stage in this attempt to create supranational nuclear regulation – described nuclear weapons as a "means of destruction hitherto unknown" aimed at "the destruction of enemy cities and the eradication of their populations,"[25] and noted the need to "[protect] mankind from the evils of atomic warfare."[26] Thus, the awareness of the potential finitude of the human race justified attempts to hierarchically limit state sovereignty.

A comparison of various civil society initiatives on the nuclear issue gives us another indication of the relationship between finite temporality and the desire to limit sovereignty. When they draw attention to the possibility of a global collapse, as the aforementioned Russell–Einstein Manifesto, or, for example, the writings of Jonathan Schell, one the most important nuclear activists of the 20th century,[27] certainly did, this leads to practical calls to limit sovereignty and overcome inter-state anarchy.[28] In turn, the International Campaign to Abolish Nuclear Weapons (ICAN) is a telling counterexample, in which the focus is not on the threat of humanity's extinction, but rather on the illegality, immorality and humanitarian consequences of the use of nuclear weapons,[29] and, accordingly, the practical measures that have been proposed do not affect

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[25] Lilienthal D. E. et al. *A Report on the International Control of Atomic Energy.* 16.03.1946. P. 8. URL: https://fissilematerials.org/library/ach46.pdf (accessed: 25.11.2022).

[26] Ibid. P. 9–10. While these quotations do not contain the most direct markers of finite temporality (for example, references to "extinction" or "threats to the survival" of humanity), they nevertheless point to the emerging awareness of a universal and total threat.

[27] "… one must conclude that a full-scale nuclear holocaust could lead to the extinction of mankind" (Schell 1982: 93).

[28] With respect to the Russell–Einstein Manifesto, see footnote 3 above; for Schell, see: (Schell 1982). It should be noted here that Schell later tried to move away from the call for a world state and to justify the feasibility of nuclear disarmament in the context of inter-state anarchy (Schell 2004). However, this attempt was predicated on the dubious assumption that deterrence continues to work after nuclear disarmament, and it appears to have been motivated more by the practical unfeasibility of the idea of a world state in the early 1980s than by a theoretical rethinking of its necessity.

[29] See, for example: Why a ban. *International Campaign to Abolish Nuclear Weapons.* URL: https://www.icanw.org/why_a_ban (accessed: 20.11.2022).

the foundations of the sovereign world order.[30] We can thus conclude that the clearer the potential finitude of humanity in respect to nuclear weapons is articulated, the more likely it is that anarchy and sovereignty will be problematized.

The second expected consequence of the temporal contradiction – the "eternalization" of nuclear weapons – can take several forms. *The first,* and most basic, form is "denial," namely, the denial that the full-scale use of nuclear weapons poses a threat to the existence of humankind. An example here would be one of the strategies presented in the second section of this paper to argue in favour of the sustainability thesis, where nuclear war is posited as non-catastrophic. *The second form* can be called "techno-optimist" and is based on the assumption that a technological solution can be found to the threat of nuclear war, such as the creation of a flawless missile defence. An example of this would be the Reagan administration's Strategic Defense Initiative (SDI). It is telling that, in both cases, "eternalization" was born at the state (SDI) or near-state level.[31] The goal, and result, of "eternalization" is *to build a non-contradictory nuclear strategy that the state could implement consistently* without falling into an internally contradictory policy of deterrence,[32] where the prevention of a suicidal nuclear war is achieved through the irrational threat of unleashing such a war.

Through the prism of "eternalization," we can take a fresh look at the much talked-about statement of Russian President Vladimir Putin: "we as martyrs would go to paradise while they will simply perish because they won't even have time to repent their sins."[33] We are, of course, not talking about an immediate readiness – much less a

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[30] Although the Treaty on the Prohibition of Nuclear Weapons does concede that "a competent international authority or authorities to negotiate and verify the irreversible elimination of nuclear-weapons programmes" (Art. 4, par. 6) shall be designated, it does not give such a body the right to coerce parties into any kind of action, and in fact ignores the issue of sanctions for noncompliance with the treaty altogether. See: Treaty on the Prohibition of Nuclear Weapons, 7 July 2017. URL: https://treaties.un.org/doc/Treaties/2017/07/20170707%2003-42%20PM/Ch_XXVI_9.pdf (accessed: 20.11.2022).

[31] For example, Herman Kahn, whose work we cited in the second section of this paper as an example of the denial of the catastrophic nature of an all-out nuclear war, worked for think tanks that were closely associated with the U.S. government, namely RAND Corporation and Hudson Institute.

[32] For more on the irresolvable contradiction, the "aporia" of the two functions of nuclear weapons – war prevention and warfare – see, in particular: (Arbatov 2021: 92–94). Within the framework of the temporal approach we are proposing, this aporia can be explained by the fact that deterrence, which has become the dominant policy regarding nuclear weapons, does not resolve the temporal contradiction, but rather attempts to "soften" it, ideally transferring nuclear weapons into a special category of "political" weapons. (The authors are grateful to one of the reviewers for pointing out that the policy of nuclear deterrence can indeed be interpreted in this way.) However, as we touched upon in the second section, the persistence of this internal contradiction leads to the "self-destruction of nuclear deterrence" (Arbatov 2021). In particular, effective nuclear deterrence against conventional threats requires that the threat of a nuclear first strike remain credible. Developing a nuclear strategy in this vein would, in turn, lower the "nuclear threshold" and increase the likelihood of uncontrolled escalation (Arbatov 2021: 99–102). This problem would not be so pressing if the leading nuclear powers switched to the doctrine of the non-use of nuclear weapons in response to a conventional attack. As things stand, however, both the United States and Russia claim the right to first use (Ibid: 93).

[33] We should probably put this statement in the broader context of Putin's speech: "Only when we know for certain – and this takes a few seconds to understand – that Russia is being attacked we will deliver a counter strike. This would be a reciprocal counter strike. Why do I say 'counter'? Because we will counter missiles flying towards us by sending a missile in the direction of an aggressor. Of course, this amounts to a global catastrophe but I would like to repeat that we cannot be the initiators of such a catastrophe because we have no provision for a pre-emptive strike. Yes, it looks like we are sitting on our hands and waiting until someone uses nuclear weapons against us. Well, yes, this is what it is. But then any aggressor should know that retaliation is inevitable and they will be annihilated. And we as the victims of an aggression, we as martyrs would go to paradise while they will simply perish because they won't even have time to repent their sins." See: Meeting of the Valdai International Discussion Club. *President of Russia. Official website.* 18.10.2018. URL: http://en.kremlin.ru/events/president/news/58848 (accessed: 28.11.2022).

desire – for nuclear war here, although this radical interpretation has been adopted by some opposition media. Quite the contrary, this statement (if analysed in its entirety) contained a completely pragmatic message: to confirm that Russia continues to adhere to the doctrine of nuclear deterrence. The problem, however, is that the very doctrine of nuclear deterrence is largely irrational: the moment it fails, the threat of a retaliatory strike loses any pragmatic or rational purpose. Statements like this one provide at least a hint of a "way out" of this absurd situation – at the very least at the rhetorical level, and possibly even at the level of a worldview. And while we can only guess as to what worldview Russian leaders adhere to, as far as individual members of Russian military and church circles are concerned, we see evidence that a belief in the afterlife justifies the potential use of nuclear weapons in their minds (Adamsky 2019). Thus appears *a third form* of the "eternalization" of nuclear weapons that we will tentatively call the "religious–traditionalist" one, and which is similar in its functions to the first two.

An initial test, hence, confirms the hypotheses stemming from the concept of temporal contradiction.[34] On the one hand, an awareness of the finite temporality of nuclear weapons triggers attempts to hierarchically limit sovereignty and overcome interstate anarchy.[35] On the other hand, until these attempts are successful, the fundamental logic of the functioning of the system of sovereign states leads to the "eternalization" of nuclear weapons – their conceptualization as compatible with the eternity of time.

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We can now return to the discussions described in the second section of this paper and assess how the concept of temporal contradiction contributes to them.

First, the concept demonstrates that, in the context of international anarchy, countries cannot "simply accommodate" nuclear weapons as a new factor, and they cannot sustainably change their strategy accordingly. The changes in the nature of great power relations as described by the theory of the nuclear revolution are, without being firmly institutionalized, rolled back over time under the pressure of the logic of inter-state anarchy. And returning to a policy of *raison d'état,* reinforced by the existence of "eternalizing" narratives regarding nuclear weapons, weakens arms control institutions and

[34] These observations are, of course, just an "initial test" of the hypotheses derived from the concept of temporal contradiction. The results of this test demonstrate the relevance and promise of this approach, although further research is required in order to draw more definitive conclusions.

[35] It does not follow from this that *any* hierarchical political structure interconnected with *any* type of finite temporality could provide a way out of the temporal contradiction of nuclear anarchy. Thus, teleological conceptions of history (for example, Christian chiliasm, or, from the secular side, classical Marxism or Fukuyama's "end of history"), if they position their subject before the onset of the final, perfect stage of historical development, also imply a finite temporality – and often legitimize imperial/universalist political projects designed to bring the end closer. In a situation of nuclear anarchy, such projects, at best, recede under the influence, among other things, of nuclear deterrence. The worst-case scenario, if we imagine a clash of several equally irreconcilable imperial projects, is a possible nuclear war "in the name of a higher goal." As a result, it is necessary to distinguish those versions of finite temporality (and the hierarchical political forms associated with them), where the source of "finitude" is the utopian horizon, from those where the idea of the end results from an awareness of the global existential threat. These versions can be called "messianic" and "katechontic," respectively (Dillon 2011: 784). We would like to thank one of the reviewers for pointing out the possibility of conflict between different versions of finite temporality.

gradually increases the risk of escalation.[36] Thus, the concept of temporal contradiction concords in this regard with the recent criticism of the theory of nuclear revolution – nuclear weapons do not in and of themselves change the conflictual logic of the system of sovereign states in any fundamental way, nor do they automatically guarantee that war will never break out between two great powers (Lieber, Press 2020).

Second, in light of the concept of temporal contradiction, it turns out that preventing a full-scale nuclear war (in other words, managing escalation) in a situation of conflict between nuclear powers requires (apart from cold rationality and strategic thinking) the ability to *"switch" between opposing pictures of the world – finite and indefinite temporalities* – as the situation dictates. This is directly related to the issue raised in the second section of this paper about the long-term sustainability of nuclear risk cycles. This "switching" is theoretically possible, meaning that it is still impossible to make the final judgement. However, the difficulty of the task appears to increase the likelihood of catastrophic nuclear crises.

Thus, the concept of temporal contradiction reinforces two cause-and-effect relationships put forward by the proponents of the thesis on the unsustainability of nuclear anarchy: 1) from anarchy to war; and 2) from war to (full-scale) nuclear war. Consequently, *an additional (albeit, we reiterate, not final) argument appears in favour of the thesis on the unsustainability of nuclear anarchy*.[37]

As we demonstrated in the fourth section of this paper, in the light of our concept, the causal relationship "acknowledgement of the catastrophic nature of nuclear weapons → transition to an international hierarchy" also looks plausible. At the same time, the logic of temporal contradiction itself says nothing about which of the two scenarios for the disappearance of nuclear anarchy – catastrophic or transformational – is more likely. This will depend on how the competition between the two "cultural-social complexes" ("anarchy + indefinite temporality" vs. "hierarchy + finite temporality") unfolds. To better understand this process, it is necessary to develop the temporal approach further, using empirical material more extensively and less schematically. Of particular interest is the application of the concept of temporal contradiction to the analysis of international cooperation in countering other global threats, climate change in particular: Does temporal contradiction also manifest itself in these cases (which it would be logical to expect)? And does it lead to the same results as in the

[36] This dialectic of two competing temporalities and their corresponding social forms can also explain the cyclical dynamics of nuclear risk (see the introduction, particularly footnote 4).

[37] Briefly moving away from nuclear issues, our findings are also relevant for assessing the thesis that the contemporary world order is both internally contradictory, since it combines material globality and ideological heterogeneity, and at the same time stable (Safranchuk, Lukyanov 2021; Safranchuk, Zhornist, Nesmashnyi 2021: 175). It would seem that supporters of this point of view, on the one hand, overestimate the ability of material globality (of which nuclear weapons are a manifestation) to restrain the ideological and social incentives to escalate conflicts, and, on the other, underestimate the potential of "negative" ideological universalization through the awareness of common threats.

case of nuclear anarchy? Finally, does the increase in the number of perceived global catastrophic threats lead to the strengthening of finite temporality and its associated social forms, as opposed to "eternal anarchy"? These questions outline just some of the directions in which further research could be taken in line with the temporal approach, which in turn testifies to its rich heuristic potential.

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