

An Insider's View of Setting the Doomsday Clock

A talk at the Annual Membership Renewal Gathering of the Coalition for Peace Action

Christ Congregation, 50 Walnut St., Princeton NJ

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I will briefly set the stage, then tell you about this past year's clock-setting, and then conclude with some thoughts about what will influence me next time.

THE BULLETIN, THE CLOCK, THE SCIENCE AND SECURITY BOARD

The Bulletin

In 1945 Chicago atomic-bomb scientists and others created a publication, called the *Bulletin of the Atomic Scientists*, where nuclear weapons and global threats could be discussed by the scientists in ways accessible to the general public. Today: A journal, a website freshened daily, and a home base, still in Chicago.

Content: Nuclear on its own for 60 years. Climate added to nuclear in 2007, then what the *Bulletin* calls "Disruptive Technologies," which includes Biotechnology (infectious disease, biological warfare) and Information Technology (disruption of human electronic systems).

Today: "What connects these topics is a driving belief that because humans created [these threats], we can control them." *And:* "We apply intellectual rigor to the conversation and do not shrink from alarming truths."

Audiences: scientists, policymakers, the public. Non-partisan. Not easy. But there is nothing Democratic or Republican about a bomb or a cloud or an anthrax bacterium. Also the balance of American and Global is not easy. Nor is the balance between rallying the activists and what I call "building the middle."

In these times, when so much of what is within the scope of the *Bulletin* evokes highly polarized discourse, I especially appreciate the middle-building. Without depolarization, durable progress across the entirety of the *Bulletin's* agenda is impossible.

The Clock

Artist: Martyl Langsdorf, 1947. An extraordinarily succinct and successful visual metaphor.

The clock is reset once a year, with the intention of conveying whether the world is further from or closer to annihilation relative to the year before, as well as relative to the *Bulletin's* previous years.

January release at a media event. Deliberately, the *Bulletin* builds suspense.

What is midnight? No explicit definition. At one limit, extinction of life on our planet, or, only a little less extreme, extinction of human life on our planet. At another limit, a horrible amount of loss of life, but speedy recovery. If I force myself to answer: “End of human civilization, followed by very little recovery for decades” is the meaning I work with. The extinction of the human species on the planet would be more than required for me to claim midnight.

History: 1947, 7 minutes. Backward 8 times and forward 17 times. Furthest from midnight: 17 minutes in 1991. The movement to 90 seconds for 2023 is the closest to midnight that it has ever been.

An insider issue: “Real estate.” From 2 *minutes* to 100 *seconds* in 2020.

At least over the past few years, The Doomsday Clock has been ever more widely embraced as a metaphor and graphic message.

The Science and Security Board

The Science and Security Board has existed since 2008. The Science and Security Board members sets the clock annually in November at a group meeting face-to-face. Our decision is revealed at a January media event. Deliberately, the Bulletin builds suspense.

Our November meeting is an iterative process over a full day, with lots of listening and some mid-stage polling. Somehow, we whose professional worlds celebrate precise reasoning, make ourselves comfortable with a process that is impressionistic and intuitive.

The Science and Security Board also writes an accompanying Clock Statement of 10 pages or so, distilled by John Mecklin (the Bulletin’s editor) from our group discussion and editorial suggestions. Past statements are online.

There are 16 people right now on the The Science and Security Board, excluding ex officio members. We are matched to the areas of focus of the Bulletin. E.g., four of us in the climate area, two of whom are famous climate scientists. Term limits.

Ex officio Governor Jerry Brown, Sig Hecker, Rachel Bronson, David Kuhlman (who is here!). Successive chairs: Alison McFarlane, then me, then Bob Rosner, currently Dan Holz and Sharon Squassoni. Another current member is from the Coalition community in Princeton: Alex Glaser. Quite a few other Princeton and Coalition people over the years.

SETTING THE CLOCK THIS TIME

For 2023, 90 seconds to midnight, forward by 10 seconds. Why?

1. *Nuclear risk.* In past years the Clock setting required a balancing of significant changes across several areas: weighing the international response to COVID-19 against the build-up of North Korea’s nuclear weapons, for example. But this year was different. One single issue dominated: Ukraine, and specifically President Putin’s threats to use nuclear weapons. Quoting from the Clock Statement, the War is “eroding norms of international conduct.” “The possibility that the conflict could spin out of anyone’s control remains high.” A priority is to repair the “geopolitical fissure” which has opened up. “The U.S. must keep the door open to *principled engagement*

with Moscow.” At a technical level, needed are mutual declarations and inspections that rebuild trust.

A critical secondary consequence of the War is a retreat from a global consciousness. The War has “weakened the global will.”

2. *Climate change*. The ratchet: Since CO2 concentration is rising relentlessly, and that fact by itself brings us closer to midnight every year, we focus on other aspects of climate change. We take into account any new science and any new technology, but mostly we evaluate changes in the political will to tackle the problem. This year, the effect of the Ukraine War was to lower the priority of climate change relative to “energy security” – all over the world. In the minds of many of us on the Science and Security Board, this back-sliding overshadowed two Conferences of the Parties to the United Nations Framework Convention on Climate Change (COPs 26 and 27) and the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), all three of which were stepping stones toward greater global commitment.
3. Biological threats. In this instance our Clock-setting discussion was building on lots of work published by the *Bulletin* over the previous months about the so-called “lab-leak hypothesis,” where the laboratory being referred to is the Wuhan Institute of Virology. This Lab and the Huanan Wholesale Seafood Market in Wuhan are the two candidates for the place where the COVID-19 virus first infected us humans and seeded the pandemic. Especially influential was the May 2022 article in the *Bulletin* by Nicholas Wade, which developed the case for the Lab being the source. The world may never know. From the vantage point of today, what matters is that neither the Market nor the Lab can be ruled out, and that either of the routes could launch a pandemic today.

The Clock Statement observes, “it is easier now than ever to obtain and modify pathogens.” It then makes a useful three-way distinction, adding the military route: biothreats can arise either from natural sources or accidentally or intentionally. In this instance, from an animal, or from a mistake at a research lab, or from a release deliberately designed to cause harm. Current capabilities for managing all three are inadequate, but we zero in on accidental release from a lab. We, and others, note that what is called “gain of function” research needs to be more tightly regulated, and we allude indirectly to the resistance from scientists working in this arena to greater supervision. We call for “the establishment of agreed-upon norms for scientific pursuit.” We also, like many others, call for the development of global institutions that can detect to the emergence of dangerous viruses much more quickly and respond much more effectively than today.

4. Disruptive technology. Our discussions year after year are about the dangers that have accompanied some newly arrived technology. Hypersonic weapons and war-fighting from space, for example. In the 2023 Clock Statement, we note the arrival of destabilizing satellite-based systems that can “track missile launchers and other mobile targets, thereby enabling preemptive attacks.” This section of our Statement also highlights the growing risks from disinformation, which degrades the capacity to reason together and find common ground.

We did not remark on artificial general intelligence in our 2023 Clock Statement. None of you will be surprised, I think, if the 2024 Clock Statement does do so.

WHAT WOULD MAKE ME MOVE THE CLOCK FORWARD OR BACK NEXT YEAR?

Just nuclear and climate here.

Nuclear risk. I wrote the group at some point during our drafting process to affirm that “spinning out of anyone’s control” was the most important phrase and image in our report.

The threat of using nuclear weapons is more dangerous than I appreciated a year ago. Human beings over the past 75 years have constructed a global geopolitical system based on nuclear deterrence, and we do not actually have full control of that system. The use of even one nuclear weapon breaks a 77-year taboo and crosses a threshold. Once that happens, as far as I can discern, there may not be any firebreak to prevent global nuclear war. Experts are not certain that they can contain a conflict that uses even a single nuclear weapon, because of the potential for step-by-step escalation that does not terminate. When I ask experts whether there are missing rungs on the ladder, or, to change metaphors, fire breaks, I get mumbling instead of a clear answer. Escalation seems to be a subject no expert is comfortable discussing with non-experts.

In November 2023, when I will be deciding whether to advocate moving the Clock closer to or further from midnight for 2024, I expect my thinking to continue to be dominated by Ukraine. I will be inclined to move the Clock forward, if the war has spread and nations seem to be concluding that threats to use nuclear weapons are effective. And back, if the Ukraine War has either ended or seems about to end. I will also want to move the Clock back if there is evidence that the taboo against using nuclear weapons has become stronger.

Perhaps the signatories to the recently enacted Treaty on the Prohibition of Nuclear Weapons (the BAN Treaty) will be finding ways to make the Treaty more effective. I wish I could believe that within the next eight months the militaries of the nuclear weapons states will begin collaborating to find ways to terminate every version of escalation. I would surely urge moving the Clock back if *that* were to happen!

Climate change I was recruited to join the Science and Security Board more than a decade ago because of my work on climate change. But I said to the *Bulletin* staff from the outset that I thought nuclear war was a much graver threat. I came to understand that I was showing my age. A younger generation, populating the *Bulletin*’s staff, were much more worried about climate change. Their working assumption was that their grandparents’ and parents’ generations surely had figured out nuclear weapons and had taken nuclear war off the list of things to worry about.

After all, the risks from climate change are worse for younger people. When I first worked on climate change, “future generations” was an abstraction: these were people living no earlier than in the 22nd century, richer than us and quite different from us. Since then, the time period of climate change impact has shrunk, and 50 years from now is the focus instead of 100 years. Future generations are my grandchildren. They can talk to me directly.

In November 2023, I will advocate moving the Clock forward, for sure, if new science points toward stronger dangerous positive feedbacks in the climate system, such as feedbacks that accelerate either greenhouse gas emissions from the tundra *or* the gliding of Antarctic glaciers into the sea. I will also argue for moving the clock forward if it looks like geoengineering is developing momentum without adequate consideration of the risks inherent in premature deployment.

I will want to move the Clock back if leaders in government, industry, and the environmental non-government organizations begin advocating effectively for more ambitious climate science, so we learn more quickly about our planet: more ocean probes, more satellites, more sensors in the ice, and also more encouragement of contributions from neighboring disciplines. I will want to move the Clock back if decision-makers are recognizing how challenging it will be to manage the retreat from fossil fuels.

The world's reception of the MethaneSat, a methane satellite expected to be ready for launch by the end of this year will also influence me. The Environmental Defense Fund, a major environmental non-governmental organization, is launching this satellite to document leakage of methane from industrial and biological sources worldwide. Such an initiative on behalf of the public interest is unprecedented. I will want to move the Clock back if the satellite, even before launch, is broadening the global constituency taking climate change seriously – if MethaneSat is building the middle.

And I might lean toward moving the clock back if between now and November I see “noun deflation”: more restrained use of Catastrophe, Armageddon, Apocalypse, Extinction – and Doomsday!

CONCLUSIONS

There are pros and cons regarding the Clock's continued use. The Clock raises awareness and promotes discussion. This, I believe, is a clear benefit. But the Clock also frightens people, especially young people who, I am told, feel “futureless.” Feeling futureless is a new disease of our own making. I worry that the Clock is making it worse.

Serious conversation is needed about why human survival is important. Utilitarians challenge us: Suppose the human race were to disappear over a generation or two gently, without direct pain and suffering. What would be lost? This is the plot of *Children of Men*, by P.D. James. I personally think we have a moral obligation to sustain human life and its intelligence on this planet. I see us as a treasure, where some others see us as a menace. We human beings may be the only instance of self-awareness in the entire universe. I see our destiny to be a many-generation project to deepen that self-awareness.

It seems right to end these remarks on a religious note, given where we have assembled today.