THE TIMEKEEPER

As the president and CEO of the *Bulletin of the Atomic Scientists*, Rachel Bronson oversees its annual exercise in calculating the world's proximity to annihilation—the Doomsday Clock —and efforts to get the public and political leaders to heed its warning and address the threats of nuclear weapons, climate change, and disruptive technologies.

By Matthew De George

"*It is 100 seconds to midnight,*" said Rachel Bronson C'90. It was January 23, 2020, and Bronson, president and CEO of the *Bulletin of the Atomic Scientists,* had arrived at the climactic moment in her organization's signature annual event of setting the hands of the Doomsday Clock. Originally conceived during the Cold War to sound the alarm on the dangers of nuclear proliferation, over the decades other existential threats—from climate change and, more recently, emerging disruptive technologies like artificial intelligence and genetic engineering—have come to factor into the calculations of how close we might be to global catastrophe.

As Bronson stood on stage, an impeachment trial in the US dominated headlines, wildfires were raging through Australia, and China that week had confirmed the first human-to-human transmission of a novel coronavirus—a day before the US Centers for Disease Control and Prevention announced the first domestic case of that disease. (Bronson recalls that one member of the *Bulletin*'s science and security board—which determines the time—was late to the presentation, stuck in high-level meetings regarding what then seemed a distant threat of a global pandemic.)

Before 2020, the latest the Clock had been set was at two minutes to midnight. The first time that happened was in 1953, when the US and USSR tested hydrogen

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bombs. The next was in 2018, based on escalating nuclear instability and continued inaction and denialism on climate change; the board kept the time there in 2019.

"We argued then that the global situation was abnormal and that this new abnormal was simply too volatile and too dangerous to accept as a continuing state of world affairs," Bronson said. "Today we feel no more optimistic." With worsening conditions compounded by influential leaders "undermining cooperative science and law-based approaches to managing the most urgent threats to humanity" for their own political gain, "the Doomsday Clock continues to tick forward."

One year later, in a mostly virtual ceremony on January 27, 2021, with COVID-19 having killed millions and continuing to ravage the world, the *Bulletin*'s clock-setters noted some glimmers of hope—the new Biden administration was moving to rejoin the Paris Climate Accords and had agreed to extend a soon-to-expire agreement with Russia limiting nuclear arsenals—but not enough to justify pushing the minute hand back, keeping the time at 100 seconds to midnight.

Bronson says now that she hoped that the decision to break the two-minute barrier, and the presentations offered by board members laying out the threats and their reasoning, would impress upon world leaders and policymakers the gravity of the moment. "We believed strongly in what we were saying and the emergency that we felt that we were in, and we needed to take this seriously," she says.

"We were all very, very much aware of the statement that we were sending" by setting the clock at its closest approach to midnight in history, adds board member Robert Latiff, a retired Air Force major general, engineering professor, and author of the book *Future War: Preparing for the New Global Battlefield*. "We talked about the pros and cons of it. And there were people who said, 'Do you guys really understand what we're doing here?' And we debated it for a while, and we really understood what we were doing. There was an absolute understanding of the gravity of it."

Like many of his Manhattan Project colleagues, Alexander Langsdorf Jr. ended 1945 disillusioned by much more than the carnage of World War II. The physicist had moved to Chicago in 1943 to work with Enrico Fermi to perform basic research in the physics of neutrons. But as the discoveries he and others made fueled the American quest for atomic weapons, Langsdorf grew fearful of the technology. Even before President Harry S. Truman approved the bombing of Hiroshima and Nagasaki, he was one of 70 scientists who protested against the bomb's use.

In September of 1945, Langsdorf was among the founders of the *Bulletin of the Atomic Scientists*. It began as a collection of articles, distributed bimonthly in pamphlet form to "equip the public, policymakers and scientists with the information needed to reduce man-made threats to our existence." In 1947, the *Bulletin* shifted to a magazine format, meaning that the publication needed a cover. Out of that necessity, the Doomsday Clock—designed by Langsdorf's wife, Martyl, who was a painter—was born. The *Atlantic Monthly* would call her stark, black-and-white illustration of a clockface, the hour hand trained on midnight, the minute hand set at a variable distance, "the most powerful piece of information design of the 20th century."

The original illustration was set at seven minutes to midnight. It was trimmed to three minutes in 1949, after the Soviet Union's first successful nuclear test, and to two minutes in 1953. The time stood at nine minutes before midnight or earlier through most of the 1970s and ballooned to 17 minutes in 1991, after the fall of the Soviet Union. Even after the attacks on September 11, it stood at five minutes to midnight. Since then, it's only gotten later for humanity.

In 1949, the *Bulletin*'s cofounder and longtime editor Eugene Rabinowitch—who until his death in 1973 was responsible for the annual setting of the clock, a duty now delegated to the science and security board—outlined a mission that has stood the test of time. Though the method has changed, and subject areas have expanded beyond nuclear containment, the spirit of collaboration with experts and presenting reasoned discussion is the same.

"Scientists have never been, and cannot be now, intent on creating public hysteria," Rabinowitch wrote. "More than anyone else, they believe in a calm, rational approach to all problems confronting humanity. However, this approach has to begin with an open-minded appraisal of the facts."

Bronson brings a well-balanced set of skills to the task of alerting the world to the existential threats it faces by marshalling reliable facts and historical context—in an environment that has become a lot noisier with competing perspectives and deliberate mis/disinformation. With a doctorate in political science, specializing in the diplomatic history of the Middle East, she is a bona fide subject matter expert like many of the *Bulletin*'s board members and the thought leaders with whom it collaborates. But the years she spent leading think tanks and influential public-interest institutions means that Bronson can see the forest for the trees, packaging information in ways that will engage the public and affect policymakers.

Her own introduction to politics and history came at age 13. Her apolitical upbringing in northern New Jersey was interrupted when her father, Richard Bronson, a math professor at Fairleigh Dickinson University, took a yearlong sabbatical in Israel. Against the backdrop of the 1982 Lebanon War, Bronson was enthralled by the interplay of history and cultures in the region. Where politics felt remote at home, they were

palpable in Israel. "I could see politics of all stripes playing out among my friends," she says. "And I came home really intrigued by that."

Her interest in the region and in foreign policy was stoked at Penn, where she majored in history. Much of the scholarship on the Middle East she encountered as an undergrad was Eurocentric, focusing on how European powers drew the lines (in some cases literally) in the region. But to Bronson, that elided centuries of tribal, religious, and cultural history that shaped how people in the Middle East related to each other. Her course of study sought to explore how the "histories and cultures shape the politics in other countries in which the United States finds itself engaging."

Bronson wrote her senior thesis on the Baghdad Pact (an alliance formed in 1955 originally among Turkey, Iraq, Great Britain, Pakistan, and Iran). She went to Columbia University for her PhD in political science, specializing in the diplomatic history of the Middle East; her dissertation centered on Syrian foreign policy from 1958 to 1967.

Upon receiving her doctorate in 1997, Bronson gravitated toward think tanks as a sweet spot between the academy and active policymaking. That, she says, "was just my speed—which was time to really think and talk and engage and understand, but with an eye toward writing books, articles, papers that could inform the current situation and possibly move it."

She started her career at the Washington, DC-based Center for Strategic and International Studies, exploring political and military affairs. In 1999 she joined the Council on Foreign Relations (CFR), headquartered in New York, as the director of Middle East Studies. She was on maternity leave and living in Brooklyn on September 11, 2001.

"The whole world of think tanks and international politics kind of flipped," she says. "There's the day—sitting in my apartment and watching the towers from my window come down and watching the smoke come over and thinking of it as a local event—but understanding that it was bigger than that. And I remember at the time commentators and even colleagues saying, 'This couldn't be worse,' and just given what I had worked on, thinking, 'This could be so much worse.'"

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Before 9/11, she says, the question was "How do we get the American public engaged in global affairs? That was our job: How do we connect with the public, engage them, help them see why their votes matter, see why things that happen far away are important to our discussions over here? That shifts overnight to, now that everyone's interested, what do we do with that interest? How do we help channel it? What's our role? … It became a very different job."

As the media scrambled to find experts to contextualize the tragedy, Bronson found herself in demand. From a panel for *Rolling Stone* to a feature in *Glamour* to television appearances, Bronson brought historical rigor to a moment of panic. She testified before Congress's Joint Economic Committee in 2003 on "Transforming Iraq's Economy," drawing from a report she codirected on guiding principles for US post-conflict policy and her own research in the Persian Gulf. She also appeared before the 9/11 Commission, and wrote for national publications like the *New York Times, Washington Post,* and *Foreign Policy*.

In Saudi Arabia's involvement—as a key US ally in the region but also the source of most of the 9/11 hijackers—Bronson saw the aftermath of a Cold War story playing out. The history of geopolitical influence operations in the region—characterized by US and Soviet efforts to buy allegiances with military spending—was integral to understanding the full history. This perspective informed her book, *Thicker than Oil: America's Uneasy Partnership with Saudi Arabia*, published in 2006.

After seven years at CFR, Bronson took a position as vice president of studies at the Chicago Council on Global Affairs, an independent nonpartisan think tank that emphasizes its allegiance to "fact-based and balanced views on global issues." The move brought her into the orbit of the *Bulletin*, which is headquartered at the University of Chicago, and she developed a close relationship with executive director and publisher Kennette Benedict, now a senior advisor to the *Bulletin*. When she retired in 2015, Bronson was offered the opportunity to lead the organization—and jumped at it.

"I believe that the issues that the *Bulletin* deals with are some of the most important 21st-century challenges, that science is going to advance more in the next 40 years than in all of human history," Bronson says. "We have walked away from all of the arms control landscape and infrastructure that our predecessors put in place. We don't have any of those for climate change. New technologies are coming that raise really exciting and really scary ethical questions. We know technology will lift people out of poverty and advance health, lifespans, and healthcare, and we also know it can offer terrifying choices about what makes us human and what kinds of experiments should or shouldn't be done. And I was really taken in this moment about the questions that the *Bulletin* was asking."

In her writing and speeches, Bronson often makes the point that we are approaching 21st-century problems with 20th-century means—a concern that goes back to the earliest days of the *Bulletin*, when founders like Langsdorf and other antinuclear activists expressed similar fears that governments were bringing outmoded views of politics and warfare to a world of unprecedented potential destruction.

When Bronson took the reins of the *Bulletin*, she inherited a potent 20th-century symbol and set about revamping it for a new century. The extension beyond nuclear proliferation predated her arrival, but she has doubled down on the expanded focus on climate change and disruptive technologies, as is evident from the range of articles and essays in the *Bulletin*'s bimonthly digital magazine and featured on its website (thebulletin.org), and by the events and panels it sponsors.

When the board convenes each November to set the hands of the Doomsday Clock, she is responsible for voicing the two big questions the board grapples with—first, whether humanity is safer or at greater risk this year compared to last year; and second, whether it's safer compared to all the previous years the clock has been set. She also manages the ensuing conversation, introducing topics and guiding the board's experts back on track if discussion stalls.

The process doesn't follow any set path, Latiff says, but rather is the product of days of conversations between the assembled experts that ends with a consensus first on changing the Clock, then on moving the time forward or backward and by how much. As experts hash out their concerns and perspectives, Bronson plays the role of traffic cop to keep everyone on task. "I thoroughly enjoy working with Rachel," says Latiff. "One word that I would use to describe her is *unflappable*. There could be controversy swirling around her, and it doesn't bother her. She just knows what's important and goes after what's important."

Concerns over climate change have been raised in the pages of the *Bulletin* since the 1960s. So setting climate change as a core topic, which happened in 2009, was less a philosophical shift than the consequence of decades of growing attention. More recently, grappling with the challenges and benefits of artificial intelligence and emerging technologies has followed a similar pattern.

When in 2020 the annual statement accompanying the setting of the Clock made the charge that "online lying literally killed," it was the culmination of years of warnings from the organization against online disinformation and misinformation as part of "the deliberate erosion by politicians of science and our core institutions" and a "threat multiplier" in existing crises.

Bronson has also "refreshed" the Clock as a symbol in the modern discourse. In an age when so much online information is deliberately untrustworthy and political polarization is at a fever pitch, the *Bulletin*, as a "small but mighty" force, seeks to carve out a space where those with differing schools of thought can hash out their differences by establishing a shared set of facts and dispensing with the straw men, scare tactics, dog whistles, and rhetorical misdirection so prevalent elsewhere.

For instance, in debates over emerging technologies, Bronson says she is dismayed by the tendency to paint people into corners as either unquestioning adopters or implacable Luddites. The *Bulletin* seeks to claim that middle ground, as "a place you can come and see the shape of the debate and you can take it seriously," she says. Only through being honest about the risks and potential drawbacks of any new technology can humanity maximize the positives that it might bring.

"The *Bulletin of the Atomic Scientists* plays a vital role in getting informed opinion from experts out there and getting it attention in a way that is incredibly challenging in such a divided media environment," says Michael Horowitz, Richard Perry Professor and director of Perry World House at Penn and an occasional *Bulletin* contributor. "The *Bulletin* has been a leader in these spaces for decades, and it really has a voice there. When you publish in the *Bulletin*, you know people are going to read it."

Besides providing a forum, the *Bulletin* also advocates for the cause of open, fact-based discussion. It has supported the March for Science, which began with a protest march in Washington, DC, on Earth Day in 2017 and advocates for "evidence-based, science-informed public policies." Bronson has been active in digital campaigns such as #RewindtheClock as a way to reach out to younger generations on social media, and the *Bulletin* is establishing itself as a source of detailed data visualizations on climate change and nuclear arms proliferation through the decades, augmenting its textual commentary and analysis.

Bronson is also able to get the best out of the varied experts the *Bulletin* relies on. For many of the issues involved, "I am not the expert," she says, "but I know an expert when I see them. And I'm not afraid of them, but I'm also very respectful and understand what they can and can't offer." Put another way: "We can't bullshit Rachel," says Latiff. "She can keep up with the best of us."

Working on something called the Doomsday Clock may not seem like a job for an optimist. But the symbol that Martyl Langsdorf created in 1947 lends itself to hope. Midnight is not here yet, no matter how close we've come.

Even in the moment when she announced, on the precipice of a world-altering pandemic, that the Clock was closer to midnight than ever before, Bronson felt hopeful that the hands can be moved back again. (As of November, following the board's latest meeting, Bronson will know whether that hope was justified in 2022. The rest of us will find out later in January at the next public announcement.)

"We have moved it back before, and we can do it again," she says. "It just takes a lot of hard work and engagement, but we've done it. We've gone from two minutes to midnight to 17 minutes to midnight, and we can do it again. Human creativity and ingenuity are amazing, and it requires commitment and diplomacy and engagement."

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