Nuclear Policy Storylistening Exercise
Stimulus Papers

This paper contains 10 stimulus papers from academics across the humanities and social science with narrative expertise. The purpose of the stimulus papers is to provide academic perspectives on issues faced by nuclear policy practitioners. Stimulus authors were invited to think specifically in the context of the four cognitive and collective functions of stories outlined in *Storylistening* and to provide narrative evidence of relevance to one or more of the salient policy issues identified in the interview summary as available at the time. Depending on discipline, this evidence might be drawn from analysis of historical policy-nuclear-narrative interactions, and/or from analysis of historical or contemporary narratives whether badged as fiction or nonfiction, oral or textual. See Annex A for full Stimulus Paper Guidance for Authors.

Examples provided to stimulus authors: You could consider the historical dimension in relation to the points raised by the interviews. For example, how can evidence from historical narratives about Russian-US relations, nuclear proliferation, or any other relevant area, be brought to bear on these interview responses? Alternatively, the paper could take a literary direction, considering speculative or nuclear narratives, or adopt a political angle, discussing the role of government and military material in public debate and decision-making. More broadly, you could address issues raised by the interviews such as worldviews, the role of public opinion, the intersection of crises, and truisms/groupthink. You may discuss which stories were (or are) treated as legitimate sources of knowledge, or as providing valid points of view, and consider how this treatment informed (or informs) decision-making and outcomes. You could explore which types of stories relevant to policy-making were (or are) popular within influential collective groups, such as government, military, scientists, businesses, think tanks, academia and mass audiences.

Authors:

- Dr Christoph Laucht, Associate Professor of History, Swansea University, UK
- Dr Daniel Cordle, Associate Professor in English and American Literature, Nottingham Trent University, UK
- Dr Eglė Rindzevičiūtė, Associate Professor of Criminology and Sociology, Kingston University, UK
- Dr Jeffrey Michaels, IEN Senior Fellow for American Foreign Policy and International Security, Institut Barcelona Estudis Internacionals (IBEI), Spain
- Dr Jonathan Hogg, Senior Lecturer in Twentieth Century History, University of Liverpool, UK
- Professor Len Scott, Professor of International History and Intelligence Studies, University of Aberystwyth, UK
- Dr Matthew Grant, Reader in Modern British History, University of Essex, UK
- Professor Paul Brians, Emeritus Professor of English, Washington State University, US
- Dr Spencer R. Weart, former Director of the Center for History of Physics of the American Institute of Physics, US
- Dr Suzanne Doyle, Lecturer in International Relations, University of East Anglia, UK

Dr Christoph Laucht, Swansea University (History)

Uncertainty, as a lack of verifiable knowledge about the consequences of decisions on nuclear weapons policy and use, lies at the centre of a dilemma that nuclear policymakers in the UK have faced at least since the establishment of a wartime British nuclear weapons project in 1941. On a conceptual level, 'uncertainty' is taken here to denote a subjective socio-cultural construct imbued with fluid meanings. It does not have to hold exclusively negative connotations but might offer opportunities for policymakers. Amongst other things, its subjective nature manifests itself in the ways in which unknowns are used to achieve personal or institutional aims in intra- or inter-departmental power politics. Even where nuclear policymakers are aware of shortcomings in their decision-making processes and acknowledge the existence of 'known knowns', 'known unknowns' and 'unknown unknowns', as the former United States Secretary of Defense Donald Rumsfeld has classified such uncertain knowledge, they are unlikely to overcome them completely. What further limits their ability to shape and implement decisions to match future developments is their confinement to 'time prisons' (Robert Jungk) – contemporary beliefs and mindsets that they project onto an uncertain future. Thus, nuclear policymakers have always confronted a degree of residual uncertainty in their decision-making.

From this it follows that major decisions on nuclear policy have commonly been taken in the absence of absolute certainty about their implications for future developments such as the (un)predictability of the cost of nuclear weapons systems or the future shape of the geopolitical landscape in which they are set to operate. In the case of the UK's independent strategic deterrent, policymakers addressed a particular set of uncertainties. Apart from its traditional role as a deterrent against a nuclear attack, consecutive British governments have viewed nuclear weapons also as a means to dispel any uncertainty over the UK's status as a global power since the start of a British postwar nuclear weapons programme in 1947. The Blair government followed a similar logic in 2006 when it decided to maintain an independent nuclear deterrent as an insurance against future uncertainties. Such unknowns might come in the form of a multi-polar world order, including potentially a North Korean strategic nuclear threat and Iran as a new nuclear weapons power. Moreover, the climate crisis will most certainly unfold in parallel to any geostrategic developments and might also lead to the use of nuclear weapons in conflicts over the distribution of resources in the Global South, for example. Therefore, nuclear policymakers might need to address multiple crises simultaneously and require revised and updated guidance documents. Where the Government War Book provided them with a catalogue of measures and responsibilities of

individual government departments that were to be taken in the event of a crisis and nuclear conflict during the Cold War, such documentation will need to include a wider range of issues, possibly incorporating both military and civilian emergencies in light of the climate crisis.

If considerable unknowns over strategic questions concerning an independent British nuclear deterrent have always existed, the same can be said about the (non-)use of nuclear weapons. After the Second World War, the 'nuclear taboo' gradually evolved and, at least, by the time thermonuclear weapons arrived in the 1950s, the doctrine of nuclear deterrence was firmly established. Under the deterrence principle, nuclear arms are not seen as war-fighting weapons but weapons of last resort. To prepare for the 'unthinkable', policymakers still looked into the possibility of nuclear war. Since nuclear war represents, in the words of Sharon Ghamari-Tabrizi, 'a *tabula rasa*' dependent on simulations, nuclear policymakers rely on wargames and exercises. This also involves 'nuclear signalling'. For this purpose, NATO discussed responses from restraint to escalation to different attack scenarios by the Soviet Union in its 1980s WINTEX-CIMEX exercises, for example. Yet, one major shortcoming that affects such hypothetical scenarios concerns the problem of 'mirror imaging' where authors and players of wargames (sub)consciously project their own subjective assumptions and bias onto an imagined opponent. As a result, WINTEX-CIMEX scenarios tell us more about NATO's beliefs and their participants' preconceptions than actual Soviet and Warsaw Pact intentions and motivations at the time, while considerable unknowns remain about the opponent's intentions. In the outside perception, 'mirror imaging' can also produce uncertainty about the motivations behind a war game. This was arguably the case with NATO's 1983 Able Archer command post exercise that simulated the escalation from conventional to nuclear conflict. Basing its assessment of Able Archer on its own actions in 1968 where Soviet and Warsaw Pact forces had used a military exercise as a pretext to invade Czechoslovakia, the Soviet Union suspected that Able Archer followed a similar rationale and thus almost launched a pre-emptive nuclear strike against NATO (Dima Adamsky). Ironically, in the case of Able Archer, an exercise intended to create greater security massively increased uncertainty, with potentially devastating consequences.

Alongside war gaming, policymakers rely on the use of historical analogies as reference points to visualize the abstract nature and consequences of nuclear conflict. Often, the 1962 Cuban missile crisis is cited as a case in point to study nuclear decision-making. Its continued use as a reference point requires adequate consideration of its historical context though to avoid simplification and generalization of its distinct place in history. After all, the Cuban missile crisis occurred at a time when the doctrine of mutual assured destruction was widely recognized.

Plus, it was played out in the public domain, making global news headlines as it unfolded. By contrast, the aforementioned case of Able Archer occurred in different circumstances – in secret outside the public sphere –, demonstrating the need for adequate contextualization. Appropriate consideration of the current vs. the historical context might become even more important in future crises that could involve a non-state actor (e.g. terrorist group) and render the concept of nuclear deterrence ineffective. Similarly, policymakers have employed historical analogies to Hiroshima and Nagasaki – the only two cities ever to have witnessed actual nuclear attacks – to estimate and comprehend the likely effects of nuclear conflict. This has also had implications for programmes to protect the civilian population as through civil defence measures. Even where data from nuclear testing programmes was incorporated into anticipated scenarios of nuclear war, Hiroshima, Nagasaki and individual nuclear weapons tests represent isolated events that are by no means comparable to all-out nuclear war.

Consequently, considerable unknowns about the full effect of all-out nuclear war have remained. During the 1980s, British Home Defence exercises such as Square Leg that simulated the effects of nuclear war on the UK were criticized by scientists for their optimistic outcomes. As a result, groups like International Physicians for the Prevention of Nuclear War and Scientists Against Nuclear Arms as well as individual experts from different disciplinary backgrounds (physics, geography, medicine, biology, international relations etc) produced alternative studies that offered pessimistic assessments. Expert studies also acknowledged and identified uncertainties and shortcomings in their methodologies. The debate amongst scientific experts over the nuclear winter hypothesis that explored the climatic effects of global thermonuclear war in the 1980s represents a chief example of a larger-scale examination of anticipated effects of all-out nuclear war. Simultaneously, it demonstrates the complexities and shortcomings of any attempt to quantify the likely effects of all-out nuclear war. This is in the sense that scientific opinion differed between a nuclear winter and a nuclear autumn. Ultimately, it reveals, once again, the highly subjective nature of uncertainty and the room that it leaves for interpretation and speculation.

Dr Daniel Cordle, Nottingham Trent University (English)

There is a rich tradition of literary and cultural works (television programmes, films, musical productions and art works) dealing with nuclear issues, particularly nuclear war.[1] The literature is generically diverse (fiction, drama, factual writing and poetry in modes that include, amongst others, literary fiction, speculative fiction, thrillers, literature for children and young adults, feature journalism and essays) and global, though most is produced from within nuclear states, or from places that experienced atomic attack (in Japan's case) or nuclear testing, or that seemed to be threatened by direct nuclear attack. A few works predate the invention of atomic weapons (H.G. Wells' *The World Set Free*, the first atomic war novel, was published in 1914), but of course most appear after 1945. The most intense production of nuclear narratives coincides roughly with periods of uncertainty and anxiety about nuclear issues (particularly the early and late Cold War periods) when they both reflected and shaped public perception of nuclear risk. In addition to insights these works offer on nuclear issues, they also, then, provide case studies in public reaction to nuclear crisis.

Scholarship on this nuclear culture is often a type of cultural history, contextualising nuclear issues socially and politically. Some scholars theorise how nuclear materials, technology and events are experienced and understood (or sometimes misunderstood). For example, the idea of a 'nuclear uncanny' might be used to describe how people are unsettled (sometimes out of proportion to actual risk) by phenomena like radioactivity, or a 'nuclear sublime' can explain how overwhelming or disorientating nuclear events are processed and made sense of through cultural traditions predating the nuclear age.[2]

There are numerous and diverse narratives about nuclear war. While some are sensationalist or even alarmist, many offer serious, worked-through reflection on the implications of nuclear policy. They are unlikely to provide direct guidance for short-term policy decisions, but they

[1] For reasons of space, I focus in this paper on those dealing with nuclear war. I should note, though, that nuclear culture offers serious, sustained reflection on other issues in ways that could be of interest to policymakers. For example, portrayals of the deep geological depository for spent nuclear fuel at Onkalo, Finland, by the Danish documentary maker Michael Madsen in his film *Into Eternity: A Film for the Future* (2010), and by writer and scholar, Robert Macfarlane, in a chapter, 'The Hiding Place,' of his book *Underland: A Deep Time Journey* (London: Hamish Hamilton, 2019, pp. 395-420), assess the challenges raised by the need to protect generations tens of thousands of years into the future from long-term radioactive waste.

[2] See, for instance, the anthropologist Joseph Masco on the nuclear uncanny in *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton: Princeton University Press, 2006), or Peter B. Hales on the nuclear sublime in 'The Atomic Sublime,' *American Studies* 32.1 (1991): 5-31.

can help develop understanding of the wider implications of nuclear issues that could (should?) shape medium and long-term policy. Fully processed understanding of these longer-term implications also provides essential context for short-term decisions, particularly in times of crisis.

In the practitioner interviews it is noted 'there is often a striking failure of corporate memory about 18 months after a crisis.' This problem with institutional memory perhaps has a corollary in broader amnesia in public discourse about nuclear issues. In the 1980s they were vigorously debated and were part of an assumed background to everyday life. This is no longer the case. Collectively, we've forgotten how to think about nuclear issues. This is partly because the nuclear crises of the Cold War passed, but it is worth noting too that there are conceptual challenges posed by nuclear weapons that make them particularly hard to think about in a sustained way.[3]

Nuclear culture provides ways of correcting our glitchy nuclear memory. On the most basic level, it facilitates an understanding of what nuclear weapons can do, as in John Hersey's *Hiroshima* (1946), an influential work of feature journalism first published in the *New Yorker* and subsequently as a book, or Masuji Ibuse's novel *Black Rain* (1966), which addresses both the attack on Hiroshima and its medical, economic and social legacies for the 'hibakusha' who survived it.[4] There is also, though, value in speculative works imagining the potentially exponentially more catastrophic impact of future nuclear wars. Jonathan Schell's *The Fate of the Earth* (1982), which like Hersey's piece also first appeared in the *New Yorker*, extrapolates from Hiroshima and Nagasaki and contemporary modelling of nuclear war to speculate about the consequences of multiple explosions in a thermonuclear age.[5] The 1980s was, indeed, replete with future nuclear fictions. Collectively, these likely furnished most people's imagination of what nuclear war might mean, as in ABC's *The Day After* (1983; the most watched made-for-television film in US history) and (rather more convincingly) the BBC's

[3] The American psychiatrist, Robert Jay Lifton, who worked with survivors of Hiroshima, speculated during the Cold War about the broader psychological impact of living in a nuclear age, arguing there was a widespread 'psychic numbing.' For Lifton, the absence of images of actual nuclear war (beyond Hiroshima and Nagasaki) and the way nuclear war threatens our 'symbolic immortality' (the sense in which, although we know we are individually mortal, we think we will be survived by family, friends, or at least other humans) makes nuclear war hard to hold in the mind. Robert Jay Lifton, *Death in Life: Survivors of Hiroshima* (1968; Chapel Hill: University of North Carolina Press, 1991). Robert Jay Lifton and Richard Falk, *Indefensible Weapons: The Political and Psychological Case Against Nuclearism* (Toronto: Canadian Broadcasting Corporation, 1982).

[4] John Hersey, *Hiroshima* (1946, 1985; London: Penguin, 2001). Masuji Ibuse, trans. John Bester, *Black Rain* (1966; Tokyo: Kodansha International, 1979).

[5] Jonathan Schell, 'The Fate of the Earth' (1982), in Schell, *The Fate of the Earth* and *The Abolition* (Stanford: Stanford University Press, 2000), pp. 1-244.

Threads (1984). The latter, adopting a docudrama format to imagine Sheffield under nuclear attack and the UK in the thirteen years following nuclear war, is particularly interesting as it sought (somewhat controversially) to integrate information about plans for post-nuclear governance of the country with research modelling the various impacts of nuclear war. The research underpinning the film is evident in the long list of consultants in the film's credits, including, for instance, scientists Carl Sagan and Richard Turco, two authors of the 1983 'TTAPS' article for the journal, *Science*, which had recently brought the possibility of nuclear winter to the public's attention.[6]

The practitioner interviews note how policymakers use 'exercising' and 'gaming.' Such practices can be thought of as kinds of future fictions, built on carefully constructed premises, but could they usefully be supplemented by discussion of, and reflection on, select literary or screen projections of nuclear futures? Although these kinds of nuclear texts don't dictate particular policy solutions (knowing the horror of nuclear war doesn't tell you how best to avoid it), they sometimes speculate how systems of nuclear security might break down. Perhaps, more importantly, they provide a way fully to engage with, to imagine, what is at stake if they do break down.

The existence and possession of nuclear weapons (indeed, their use, in the sense that deterrence is an active deployment) has been normalised. This would have seemed inconceivable at the beginning of the nuclear age when there was much discussion about the paradigm shift in warfare and international relations they would precipitate. Some prominent atomic scientists, for instance, thought they necessitated energetic reflection on international security because they threatened a catastrophe like nothing experienced before. Such a perspective can be seen in the (in retrospect, perhaps touchingly naïve) title of a collection of essays, *One World or None* (1946), designed to educate the public about atomic energy and including contributions from several Manhattan Project and related scientists.[7] Nuclear culture can 'denormalise' the existence of nuclear weapons, reminding us how extraordinary they are.

It isn't that we don't now know in an abstract sense what nuclear war threatens, but the relative invisibility of nuclear weapons and their continued non-use raise the possibility that latent

[6] R.P. Turco *et al*, 'Nuclear Winter: Global Consequences of Multiple Nuclear Explosions,' *Science* 222.4630 (1983): 1283-92.
[7] Dexter Masters and Katherine May (eds), *One World or None: A Report on the Full Meaning of the Atomic Bomb* (1946; New York: The New Press, 2007). The book includes contributions from Eugene Wigner, J. Robert Oppenheimer, Philip Morrison, Hans Bethe, Niels Bohr, Leo Szilard and Albert Einstein.

instabilities remain unaddressed because we struggle to imagine the end of the ongoing everydayness of our world. The system seems safe because it hasn't yet broken down, but when stakes are high and day-to-day risk is low, how do we calculate what is an acceptable level of medium-term risk? Is a once-in-a-century, or a once-in-two-centuries, risk of nuclear war acceptable? (In the 1990s social scientists, for example Anthony Giddens and Ulrich Beck, conceptualised these ideas through the notion of the 'risk society.')[8]

Literary and other cultural narratives of nuclear war are unlikely to offer direct practical solutions. In the practitioner interviews it was suggested that Raymond Briggs' graphic novel, *When the Wind Blows* (1982), an influential depiction of nuclear war, provided 'a way of preparing the whole family in quite a reasonable and understandable way for national disaster,' but the book was less about what to do in the event of nuclear emergency than it was about the urgency of preventing such an emergency. Although it showcased civil defence advice, it sought to reject this type of preparedness for the false sense of security it produced.[9] Jim and Hilda, the elderly protagonists, imagine themselves in a crisis like that of the Second World War, on which they look back nostalgically, but their preparations are depicted as dangerously self-deceiving. This difficulty of imagining what nuclear war means – that it cannot be projected from our historical memory of previous wars – is a recurrent theme in nuclear culture. It is addressed, for instance, in significant essays, 'Thinkability' (1987) by the British novelist Martin Amis, and 'The End of Imagination' (1998) by the Indian novelist, Arundhati Roy.[10] In 'Thinkability' Amis reworks RAND strategist Herman Kahn's notion that we 'think the unthinkable' to ask how we might think beyond the systems of deterrence that pertained when he was writing. In 'The End of Imagination' Roy responds to nuclear testing by India and Pakistan in the context of the Kashmir crisis to interrogate what she sees as a dangerous nuclear nationalism, obscuring the devastating global impact of a nuclear conflict that would be a war 'on the earth herself.'[11]

In terms, then, of the functions of 'storylistening' identified in the NPSE stimulus paper guidance, the value of nuclear culture – and of work in the humanities on that culture – is twofold. Firstly, it offers points of view outside the context of short-term policy decisions,

[8] Ulrich Beck, trans. Mark Ritter, *Risk Society: Towards a New Modernity* (London: Sage, 1992); Anthony Giddens, 'Risk and Responsibility,' *The Modern Law Review* 62.1 (1999): 1-10.
[9] By implication in the book, and explicitly in the film (1986), this civil defence advice is the *Protect and Survive* campaign.
[10] Martin Amis, 'Thinkability,' in Amis, *Einstein's Monsters* (1987; London: Vintage, 2003), pp. 7-28. Arundhati Roy, 'The End of Imagination' (1998), in Roy, *The Cost of Living* (London: Flamingo, 1999), pp. 117-62.
[11] Roy, 'The End of Imagination,' p. 124.

framing nuclear weapons in terms of a shared human and planetary significance beyond their impact on individual countries. It suggests the need to think beyond national interests, even when policy is made at a national level. Secondly, it furnishes us with ways of imagining the 'unthinkable' and asks us to consider the nuclear futures that will transpire if, or when, international security fails. It can, thus, provide an impetus to policy and provide an imaginative framework in which to experiment with various policies and their implications.

Dr Eglė Rindzevičiūtė, Kingston University (Criminology and Sociology)

In this paper I briefly outline two narrative formations. The first one draws on my research into the public presentations of the history of the Soviet/Russian nuclear past in Russian museums and heritage sites.[12] The second one is based on my study of the transnational computer modelling during the Cold War, with a particular focus on the simulation of the global environmental effects of nuclear war.[13]

1) Offering multiple points of view and new framings / worldviews: Soviet legacies in the contemporary Russia – **self-victimisation**

There is a clear relation between the worldview and justification of nuclear weapons: the sheer power of the nuclear bomb and the public fear of radioactivity requires justification as to the ownership and deployment of nuclear weapons. During my fieldwork in the Russian museums and heritage sites that focus on the nuclear past, I observed a particular narrative structure that is used to embed more specific stories of different types of nuclear technologies, personalities and localities.

The story is centred around victimisation and can be summarised as follows:

Because the US created an atomic bomb and detonated it in Hiroshima and Nagasaki, the Soviet Union was cornered and left with no choice but to create its own nuclear weapons. Accordingly, the government of Russia, as the inheritor of the Soviet nuclear arsenal, is bearing enormous responsibility for the securing the country with a "nuclear shield," a system of nuclear defence that was originally created through a great sacrifice of Soviet scientists and engineers.

This narrative clearly places the US in the position of protagonist and the Soviet/post-Soviet Russia as an actant with reduced agency as well as diminished responsibility. Soviet/post-

[12] Egle Rindzeviciute, "Nuclear Power as Cultural Heritage in Russia," *Slavic Review* 5, no.4 (2021): 839-862.
[13] Egle Rindzeviciute, *The Power of Systems: How Policy Sciences Opened Up the Cold War World*. Ithaca, NY: Cornell University Press, 2016, Chapter "From Nuclear Winter to the Anthropocene"; Egle Rindzeviciute, "Soviet Policy Sciences and Earth System Governmentality," *Modern Intellectual History* 17, no.1 (2020): 179-208; Egle Rindzeviciute, *The Will to Predict: Orchestrating the Future through Science*. Ithaca, NY: Cornell University Press, 2023, Chapter "Global Prediction: From Targeting to Orchestration."

Soviet Russia is presented as a victim of the changed world (the nuclear age) that seeks to defend itself and from this defence derives an ethical position.

These actants are situated in the world characterised by the competing strives to global domination, where the Soviet/post-Soviet Russia was treated in an unjust way and where it will use all means possible to defend itself.

This narrative of self-victimisation is deployed by the Russian state corporation Rosatom and presented in key national museums and associated media., Iit informs perceptions of Rosatom's staff (gathered in the interviews conducted by Rindzeviciute in 2016-2019). However, there are other narrative systems developed by different actors.

2) Informing anticipations of the (long-term) future

As I showed in my research, an important opposition to this victimised narrative that justifies nuclear weapons is the future-oriented narrative that emphasises the unpredictable and global consequences of nuclear war. This narrative has been circulated by global biosphere and computer modelling scientists, as well as arms-control proponents since 1983. Although this narrative gained prominence in the mid- and late 1980s and underpinned the reduction of nuclear arsenal in the 1990s, it has become largely forgotten. This is despite the way in which the original creators of the narrative continue promoting in science popularisation outlets.

The narrative is labelled "the nuclear winter story" (although the actual research outlines milder, "nuclear autumn" and more localised impacts) and it can be summarised as follows:

Even a limited nuclear war in the Northern hemisphere will cause an irreversible climate change, because the nuclear explosions on urban infrastructures will create giant fires, emit particles into the high levels of the atmosphere thus creating a particle cloud that will lead to global cooling, which will entail the redirection of air streams and ocean streams. In combination with the impacts of radiation fall out, the global cooling will severely impact the biosphere in the long term, making much of the Northern hemisphere unsuitable for human habitation.

The key actants in this narrative are the biosphere and the geophysical system of Earth. The time frame of these protagonists is long term and the scale of changes is transnational and

large scale. It might not be possible to estimate the biosphere changes on the basis of existing computer simulation models, because of the scale of complexity and uncertainty.

The key novelty of the nuclear winter narrative is that it introduces a) non-human actors in the nuclear war scenario and b) considers long-term consequences for the environment as opposed to the short term measures of the impact of nuclear war on infrastructure and population.

Dr Jeffrey Michaels, Institut Barcelona Estudis Internacionals (Foreign Policy & International Security)

International crises involving a risk of nuclear escalation are rare, but contrary to widely held assumptions, the behavior and information needs of senior officials are not necessarily distinct from similar crises involving the use of military force. To the extent academics have traditionally distinguished 'nuclear crises' from 'non-nuclear crises' in terms of how governments deal with them, the key issue normally highlighted is the *excess* caution induced in policymakers' minds due to the higher stakes. This raises an important problem: how to assess the existence of something that is in a policymaker's head, and then demonstrate whether the impact on policy was greater than might otherwise have been the case?

Establishing the existence of a policymaker's cautious disposition, to the extent this can ever be conclusively established, is normally achieved by interviewing the policymaker after the crisis, or can be found in a policymaker's memoir, in which the policymaker will explicitly state they were frightened and perhaps make some vague reference to how it affected their selection of policy options. In contrast, for the historian examining the minutes of high-level policy meetings, it is much more difficult to pinpoint instances in which this excess caution played any notable role in the crisis. There are at least two reasons why this is the case.

First, although there will be an underlying policy assumption that nuclear escalation must be avoided, policy discussions about *how* to avoid it will often be inconclusive. Whereas some policymakers will argue that it is important to show strength, others will argue a conciliatory approach will reduce the escalatory risks. For instance, during the Cuban Missile Crisis, US policymakers were fundamentally divided on the most effective *means* of preventing nuclear escalation, and this was centered on the debate about whether to attack Cuba (airstrikes only vs airstrikes + invasion) or instituting a naval 'quarantine'. The more hawkish officials, such as General Curtis Lemay, argued that the best way to prevent a future Soviet seizure of West Berlin, and hence avoid a war with NATO that was expected to quickly become a nuclear war, was to attack Cuba, thereby demonstrating strength. In contrast, other officials worried that attacking Cuba would force the Soviets to retaliate leading to an uncontrollable escalation.

When analyzing caution in relation to nuclear risks, focus on policy debates *during* a crisis can often distract from what is arguably the more important policy debate that led to it becoming a nuclear crisis in the first place. In other words, did not Nikita Khrushchev's desire to place nuclear weapons into Cuba, with all the obvious risks this entailed, as is clear from the Soviet

emphasis on secrecy, provide clear evidence of a *lack* of caution? Likewise, was not John F. Kennedy's insistence on treating the problem as a crisis demanding some type of military response, rather than downplaying or ignoring it, not also indicative of a willingness to take risks that might ultimately have led to a nuclear war? Thus, when seeking to assess the role of caution in this, or some other, nuclear crisis, it is essential to distinguish between the willingness to enter into a crisis where nuclear risks are likely, and then, having entered the crisis, to select policy options that aim to minimize those risks. As a matter of course, political leaders faced with these situations will be obliged to strike a balance between looking and acting tough and risking annihilation.

A second reason pinpointing nuclear-related caution is difficult is that fear of nuclear escalation may constitute the most important risk, but it will scarcely be the only risk. And it is here that the challenge of distinguishing between policymakers' behavior and information needs in nuclear vs non-nuclear crises is evident, particularly because of the natural inclination to stress the nuclear context whilst marginalizing the basic non-nuclear problems. Put another way, if the nuclear context is removed, are there not other issues that also induce a cautious approach? Is it not natural in any crisis for the use of force not to be considered the first option? Indeed, if it were the first option, wars would presumably be breaking out much more frequently than they do. Again, the 1962 Cuban crisis is illustrative of this problem, with almost the entire historical narrative focused on the critical 'thirteen days', whereas many of the policy options discussed *during* the crisis, especially invading Cuba, were also debated by those same policymakers months earlier when the presence of nuclear weapons in Cuba was *not* a factor, yet these earlier discussions, in which US officials were reluctant to use force, are almost entirely absent from historical analyses. Interestingly, comparing the policy debates from before the crisis with those that occurred during the crisis reveals a regurgitation of many of the same arguments. Concerns about alienating world opinion and undermining international law, the basic military problems of invading Cuba, such as the large numbers of troops needed to overcome the Cuban defences, expectations of heavy casualties, the prospect of Soviet retaliation elsewhere; all these issues were debated by the Kennedy administration for months prior to the crisis yet without any resolution on the best way forward.

Amidst both nuclear and non-nuclear crises policymakers will ask for information or make assumptions about the likely courses of action of their friends, adversaries and domestic constituencies in response to actions taken or not taken. For example, what is Putin thinking? What is Kim Jung Un thinking? What is Xi Jinping thinking? In what circumstances will they go to war or use nuclear weapons? Answers to these questions will always be guess work, and

policymakers' confidence in them is unlikely to be high. But are policy decisions reliant on possessing reliable answers to these questions, or are they based on something else? More academic research is needed to provide an answer to this question.

Clearly, nuclear crises add the risk of nuclear use to the policy debate, which may alter the understanding or perceived relevance of the non-nuclear variables, but it does not eliminate them. Long before North Korea acquired a nuclear arsenal, neither the US nor South Korea were terribly keen on launching attacks against the country's nuclear infrastructure. Similarly, neither the US nor Israeli governments have been keen to attack Iran's nuclear infrastructure prior to its likely acquisition of a nuclear weapons capability. Therefore, even in the absence of nuclear retaliation, various other reasons, presumably to include conventional retaliation, must be accounted for when analyzing the reasons for inaction in these cases. How to identify the reasons for policy action in some cases and policy paralysis in others? Were policymakers deterred or self-deterred? As both scholars and practitioners seek to understand the past to improve future policy practice, especially in 'nuclear crises' where the stakes are so high, it is imperative to ensure the nature of the stakes does not deflect attention away from the fundamental policy disagreements at the root of the crisis and the reasons why other policy options for resolving these disagreements were not pursued.

Dr Jonathan Hogg, University of Liverpool (History)

Not everyone is scared of nuclear weapons. Often this depends on how they are described, which, of course, requires an exercise in imagination. It's safe to say that, historically, 'official' rhetoric around nuclear weapons has cultivated particular ideas, tropes, motifs – a discourse – around nuclear weapons. We might observe how the reality (or morality) of radiation weapons is downplayed when encountering public statements from politicians: 'faith' in 'peaceful' nuclear weapons; nuclear weapons described as a 'cornerstone' of defence policy; or how aggressive use can be explained away by 'madness', while ownership (and responsible non-use) is 'rational'. Official public discussion of the consequences of nuclear attack has always been avoided (in public at least), or sanitised images and narratives are introduced (*Protect and Survive,* for instance). We might look to this downplaying of nuclear risk, radiation harm, or backing away from 'thinking the unthinkable' as part of a dominant imaginary that supports deterrence as a policy. This might inform a set of assumptions that (sometimes almost invisibly) inform or guide decision-making. In the sphere of energy politics, there has been a lot of interest in 'sociotechnical imaginaries' recently - how certain ideas about the future can become dominant, and then become embedded or institutionalised (sometimes in an unquestioned way) in policy. Other ideas get pushed out, or are rendered illegitimate, in the quest for a particular goal.

When we look around popular culture for nuclear stories now, it is quite difficult to find well publicised counter-arguments to what appears to be a stable and permanent nuclear policy. Looking back to British culture in the 1980s, it is tempting to conclude that times have changed: this was an era when being scared of the Bomb was articulated at every turn – on the TV and radio, in bestselling novels, poetry and film. Life-threatening radioactivity was often centred - almost like a character - in stories. Martin Amis wrote about the nuclear shadow that followed him around and embedded itself in his writing; Raymond Briggs wrote *When the Wind Blows* (1982) as a tragic fable about what happens if you follow the advice in *Protect and Survive* to the letter; *Jenny: My Diary* by Yorick Blumenfeld was a curious bestseller about the violence of radiation harm, published by Penguin in handwritten form, centring the imagined post-nuclear world in the pages of a discovered diary which charts the impact of radiation illness, symbolised by the declining legibility of Jenny's handwriting. There are great examples of nuclear satire as well, such as Sue Townsend's *Adrian Mole* series, whose central character cursed the Bomb because it threatened both his blossoming love life and his GCE results. Ultimately, Townsend was making a serious point about the absurdity and unfairness of nuclear brinkmanship – again, social commentary on consequences.

Jonathan Schell's *The Fate of the Earth* (1982) is a great example of non-fictional nuclear commentary that became popular in this era. Schell argued that species extinction is a defining feature of the nuclear age and that fundamental moral and ethical questions about the prospects of human and environmental survival in the face of continued commitment to nuclear weapons diplomacy should not be ignored. In the 1980s we can see glimpses of a shared experience of nuclear anxiety, and perhaps even an informed collective understanding of nuclear issues. In his memoirs, Reagan claimed that there was a 'direct line' between the emotional experience of watching the TV movie *The Day After* (1983) and the signing of the INF Treaty in 1987. In this era, audiences were being subjected to shocking and emotionally disturbing nuclear narratives for the first time. As special effects improved, the mushroom clouds in *The Day After* and *Threads* (1984) appeared horrifying, real – audiences were introduced to an element of authenticity in this new breed of nuclear story. These nuclear stories required serious audience engagement with *consequences*: trying to think the unthinkable. We might say that thinking about the consequences of a nuclear attack was a familiar part of living through an era defined by a 'politics of vulnerability'. Stories and narratives presented nuclear weapons as radiation weapons, and focus was often on the intergenerationalinter-generational consequences of this on bodies and minds. The imaginative leap that these stories took faced nuclear harm head on – not just the instant destruction in the minutes and hours following a nuclear detonation, but the slow violence of radiation.

The forms this slow violence can take are varied, and discussion of these consequences are contested at present: the news of medallic recognition of UK nuclear test veterans was recently announced, and the ways in which the nuclear tests impacted individual lives varied hugely. There is a complicated collection of life stories waiting to be collected that would chart military service, health effects, and recollections. It is interesting how a public artwork in Southend by Gabriella Hirst was removed after pressure from local Councillors due to the mention of nuclear colonialism. In subtle ways, how we talk about nuclear weapons and the history of practices and policies that support them, leans on the cultural memory of the Cold War and on an ingrained set of assumptions that link nuclear weapons to particular conceptions of national identity.

Perhaps there is another element that is less common in an era of individualised content streaming, namely stories as mass events. Because we can trace the political and cultural impact that *The Day After* and *Threads* had, we might then be more confident gauging how public opinion could be linked to the reception of stories (we saw this again recently, where it seems clear that HBO's *Chernobyl* has had a real impact on Belarusian citizens). In the 1980s

though, emboldened by the persistent focus on moral and philosophical questions, was there more certainty about how narrative or stories – within a broader nuclear-political discourse – had power and social function? Perhaps the imagined community that seemed to coalesce around the nuclear danger trope (and engaged with nuclear consequences) has generally dissolved, especially since the end of the Cold War.

With this brief essay I've tried to suggest that the contested nuclear narratives that were a lively part of 1980s culture have gradually been replaced with a more rigid set of dominant imaginaries about nuclear deterrence – the contested arena now seems to be part of the 'culture war' and is concerned more with how to link domestic political/ideological concerns with Cold War legacies, and less about ultimate questions on nuclear use and consequence. Increasingly, the stories that remind us collectively of the likely realities of nuclear harm slide from view.

Brief appendix:

'Politics of vulnerability' - Dan Cordle's idea that fear of the Bomb saturated Anglo-American culture, and could influence authors, musicians and artists hugely. Expanded upon in his book *Late Cold War Literature and Culture: The Nuclear 1980s* (2017)

A diagram outlining 'sociotechnical imaginaries' in Tadeusz Józef Rudek, 'Capturing the invisible: Sociotechnical imaginaries of energy, the critical overview', *Science and Public Policy*, Volume 49, Issue 2, April 2022, Pages 219 245

https://doi.org/10.1093/scipol/scab076

Professor Len Scott, University of Aberystwyth (History)

The 1962 Cuban missile crisis is invariably seen as the closest humanity has come to thermonuclear war. The crisis has been one of the most intensely scrutinised events of the twentieth century and illuminates how new evidence and interpretation generates new narratives. This paper outlines aspects relevant to salient policy issues identified in the project design.

Nuclear Threats by Word and Deed.

Vladimir Putin's public statements about nuclear weapons have generated concern in the west - as they were no doubt intended to do. Some statements can be seen as a basic deterrent posture that if an attempt is made to destroy Russia, it will respond with weapons of mass destruction. Perceived allusions to tactical nuclear weapons have been vaguer and more ambiguous (as have NATO threats to retaliate). Whether the Crimea and parts of Eastern Ukraine are sufficiently part of 'Russia' to merit Moscow's use of weapons of mass destruction remains a 64 million Rubel question.

Public threats of nuclear war in the early 1960s were more frequent and explicit. In 1960, Nikita Khrushchev threatened to fire InterContinental Ballistic Missiles (ICBMs) at the United States should the US invade Cuba. Upon discovery of Soviet Medium Range Ballistic Missiles (MRBMs) in Cuba in 1962, John F. Kennedy threatened 'a full retaliatory response' against the USSR should any missile be fired against any country in the western hemisphere. He also made a more oblique threat against Cuba (describing it as a 'nuclear target').

Khruschev's threats were entirely rhetorical. Moscow possessed only four ICBMs at that time and an attack on American cities would have been an act of national suicide. Would Kennedy have resorted to massive retaliation in response to a limited attack on the US or an attack on an ally? His Defence Secretary, Robert McNamara, said later he was certain JFK would have responded with 'one, or two, or maybe ten' nuclear weapons. 'No way' would there have been a full retaliatory response. There is no evidence that Kennedy gave any consideration to using nuclear weapons against Cuba. More surprising is McNamara's recollection that there was no discussion in the White House of how nuclear weapons would be used.

Public words in 1962 were accompanied by mobilisation of nuclear forces. This contrasts with what has happened so far in the Ukraine war. How far the Soviets alerted their strategic nuclear forces in 1962 has been a matter of dispute, though preliminary alerting measures

were undertaken. The British Prime Minister Harold Macmillan was concerned that 'mobilisation sometimes caused war' and was keen to avoid 'overt' action, refusing to allow RAF Bomber Command to disperse its nuclear bombers. By contrast, Washington raised the alert state of its land-based missiles, strategic bombers, and submarines. ICBMs, NATO-assigned Intermediate Range Ballistic Missiles (IRBMs) and Submarine-Based Ballistic Missiles were readied for launch in less than fifteen minutes. Airborne-alerted strategic bombers flew to and from their 'Fail Safe' points, two hours from their targets, waiting for the 'Go-codes'. These were preparatory measures and did not in themselves indicate intent to initiate nuclear war. Whether they helped deter/compel Khrushchev or whether they risked escalation (or both) remain matters for debate.

Inadvertent Nuclear War

Whatever risks (or benefits) of mobilising strategic forces there is less doubt concerning risks from tactical nuclear weapons. Since the 1990s, considerable evidence has emerged of what happened at the operational level, where subordinate commanders (down to individual pilots) could use (and in some cases may nearly have used) nuclear weapons. Senior military and political commanders had no physical or electronic control over these weapons, and in many instances political leaders were entirely oblivious to what was happening.

The deployment of Soviet tactical nuclear weapons (cruise missiles, short-range ballistic missiles, and nuclear bombs) in Cuba went unnoticed by US intelligence, even as preparations proceeded for an invasion. There remains debate over whether Kennedy would have authorised a military attack had diplomacy not succeeded. Yet had an invasion occurred, various risks of nuclear war existed. The Americans, for example, did not realise that nuclear-armed cruise missiles were forward-deployed to destroy their naval base at Guantanamo.

Among the most dramatic narratives are those of Soviet submarine captains actively considering the use of nuclear torpedoes against US warships that were dropping explosive devices to signal them to surface. US leaders did not know the submarines were nuclear-armed and had failed to consider the possibility.

Both Kennedy and Khrushchev grew increasingly concerned that they might lose control of events. Yet Khrushchev notably failed to consider the potential implications of his actions, including when he sent some one hundred tactical nuclear weapons to Cuba. Initially, he favoured granting his commanding general in Cuba authority to use them in the event of an

invasion (though he and the Presidium changed their mind), but beyond that, little thought was given to what would have followed the initial use of these nuclear weapons.

US contingency plans for an invasion and blockade long predated the missile crisis (and had been reviewed at the beginning of October 1962). Yet crucial details about how the naval blockade was to be enforced against Soviet submarines were agreed on an *ad hoc* basis after the blockade was announced (the day before confrontation with Soviet submarines was expected). Little thought was given to whether Soviet submarine captains knew the explosives were real depth charges.

There was also risk of possible accidents involving nuclear weapons. In 1961, for example, the crash of a US bomber in North Carolina came terrifyingly close to a thermonuclear explosion that risked sending nuclear fallout over Washington, New York, and other cities.

Other accidents waited to happen. At the height of the crisis, a US aircraft flew off course and a thousand miles into Siberian air space. There was the possibility that Moscow would take this ais a warning indicator of a US nuclear first strike. In addition, no-one at the political level in Washington was aware that when US fighters headed into a potential battle zone to provide support, they were carrying nuclear-armed air-to-air missiles (that the pilot could fire on his own judgement).

Arrangements for the command and control of nuclear weapons are critical to assessing how subordinate actors might start a nuclear war. As awareness of the risk of inadvertent nuclear war grew in the decades after the missile crisis, so did narratives that stressed the crucial importance of *luck* in ensuring the avoidance of catastrophe.

Understanding and Misunderstanding

Kennedy and Khrushchev struggled over time to understand each other's views of the world and how they saw specific issues in East-West confrontation. The missile crisis reflected mutual failings of understanding. Was 'groupthink' significant? Kennedy and his senior officials believed that Khruschev would not deploy nuclear missiles in Cuba. However, that consensus was challenged by the Director of the CIA, John McCone, who was convinced that Khrushchev would. Moreover, the US intelligence community invested much effort in searching for something they did not expect to find.

Khrushchev believed that Kennedy would accept missiles in Cuba as a *fait accompli*, as the Soviets had accepted IRBMs on NATO territory. From available Soviet records, it is clear there was initial opposition to Khruschev's plan. Yet, while Khrushchev needed the agreement of the Presidium, the proposals themselves (to deploy the missiles, to deploy them in secret, and to announce their withdrawal) were very much Nikita's. In Washington, there was concern that Khruschev's behaviour may have been the result of a hard-line faction in the Kremlin determined on confrontation. It is now clear this was not the case.

Another of JFK's misconceptions was that any action against Cuba would meet with a Soviet response against West Berlin. When this was suggested to Khrushchev as he struggled to craft a diplomatic solution, he dismissed it out of hand. Kennedy, nevertheless, continued to believe that even as the missiles left Cuba, Khrushchev still intended a new confrontation over West Berlin.

Secret Intelligence

Intelligence can be vital in developing understanding of an adversary's intentions (as well as her/his capabilities). Sometimes it cannot. A striking comparison between 1962 and 2023 is that the US - and British - intelligence communities were mistaken in believing that Khrushchev would not deploy missiles in Cuba. In 2023, they got it right in believing Putin would invade Ukraine. How exactly they got it right may well remain hidden (or at least opaque) for many years. Secret sources need to remain secret, especially where they may inform future estimates of Putin's actions. Yet the fruits of intelligence assessment have been publically used by the west for managing international and domestic opinion (as they were in 1962 when the US revealed aerial photography of the missile bases in the UN Security Council).

Evidence and Narratives

New testimony and archival evidence, including from Soviet and Cuban sources, have changed interpretations of how and why the crisis ended. These have significant consequences for anyone seeking to draw lessons from the nuclear past for the nuclear present.

The dominant (western) narrative after the crisis was that Kennedy succeeded by remaining steadfast and making clear his intention to use force if Khrushchev did not give way. His actions combined carefully controlled crisis management and carefully calibrated coercive

diplomacy. So, the story went. Yet, at the same time JFK was anxious not to back Khrushchev into a corner and followed the advice of the ancient Chinese philosopher of war, Sun Tzu, to construct a 'golden bridge' by which his enemy could retreat. More prosaically: if Khrushchev withdrew the missiles, Kennedy would promise not to invade Cuba. The president also refused to subordinate the interests of his allies to those of the United States by refusing Khrushchev's demand to withdraw 'analogous' weapons from Turkey. So, the story went.

For several decades after 1962, western assessments were drawn primarily from western documents and published sources, and the memories of western participants (in keeping with much Cold War historiography). With the twenty-fifth anniversary of the crisis new methods of enquiry were developed by scholars in North America, christened 'critical oral history'. These involved conferences that brought former colleagues and protagonists to reflect and debate, and using new archival disclosures. Equally significant, access to archives in Moscow (albeit limited and controlled) provided insights into Soviet (and Cuban) perspectives and decision-making. One particular source of evidence compelled reappraisal of American policy-making - the discovery that President Kennedy had secretly recorded meetings of his advisors in the White House, providing transcripts and recordings of the discussions.

New evidence led to more qualified and nuanced interpretations. On the question of whether JFK was prepared to trade NATO-assigned missiles in Turkey and Italy for the missiles in Cuba, they altered understanding significantly. One of the most influential western texts on the crisis was Robert Kennedy's *Thirteen Days,* published posthumously (after his assassination) and edited by JFK's speechwriter, Ted Sorensen. In 1989, Sorensen admitted at a conference in Moscow that he had deliberately falsified RFK's account to preserve the myth of the dominant narrative. In 1994, Soviet documentation revealed what Robert Kennedy had told the Soviet ambassador to Washington, on behalf of the president. NATO-assigned missiles could be withdrawn from Turkey (and Italy) some months after the Soviet missiles left Cuba, but only if NATO did not learn of the deal.

Deception is frequently integral and invariably hidden in the construction of narratives, most obviously where narratives serve political or self- interests. Lying (by commission or omission) can also be the focus of the narrative itself – as with Khrushchev's assurances to Kennedy that he would not deploy 'offensive' weapons in Cuba and Kennedy's initial attempts to 'plausibly deny' CIA involvement in the Bay of Pigs operation in 1961. It is also clear that in 1962, duplicity was an ingredient in relations between allies.

Many historians assumed that JFK's offer then formed the basis of the deal (and indeed NATO agreed withdrawal of the missiles from Turkey and Italy in 1963). It was clear that Kennedy had not stood firm but sought a secret accommodation. Some have argued that if Lyndon Johnson had been aware of Kennedy's secret diplomacy, he would have pursued a different strategy in Vietnam. A more general point is that secrecy is integral to statecraft, and it may take many years (if indeed at all) to discover crucial evidence.

Revising Revisionism

The revisionist interpretation, however, soon required revision. Records of the Presidium emerged that suggested Khrushchev had quickly concluded that withdrawal of the missiles was necessary and persuaded the Presidium of this several days before the crisis reached its public climax. So, in hindsight, any deal - secret or otherwise - was superfluous.

Other new evidence provided insight into Moscow's decision-making, including when Khrushchev subsequently assembled the Presidium to agree the immediate announcement of a 'retreat'. Khrushchev's chief foreign policy aide recounted how he took a phone call from the Foreign Ministry relaying the ambassador's report of his meeting with RFK. He then read out his notes to the Presidium. Yet by then, Khruschev had already made clear to his comrades that 'In order to save the world, we must retreat.'

A narrative constructed with this information suggests that the deal was not instrumental in obtaining withdrawal of the missiles from Cuba. Such a narrative depends on the rarest combination of high-level personal testimony and archival disclosure in Moscow and Washington. In short, it requires a micro-history level of analysis that can track information flows and paper trails on a minute-by-minute basis and thereby illuminate the choreography of decision-making in, and between, Washington and Moscow. All this comes with the health warning that as new evidence has changed interpretations, more new evidence might compel further re-interpretation.

To learn from the past requires that we know what happened. Yet what happened is often hidden (sometimes deliberately so) and our knowledge of the past mutates. Learning the 'wrong' lessons from history may be more disadvantageous than gaining advantage from the 'right' lessons.

Golden Bridge-building

The suggestion that building a golden bridge behind his adversary was a crucial part of JFK's statecraft nevertheless has relevance to key debates concerning how the Ukraine war can end and whether Putin should be provided with an 'off-ramp' to save face. This raises issues beyond the scope of this paper. Any attempt to draw parallels between 1962 and 2023 certainly needs to take account of the fact that the missile crisis was a confrontation between the superpowers and the Ukraine war is a war between Ukraine and Russia. Yet the idea that Kennedy's golden bridge offers a helpful guide to the present has gained credence.

Kennedy's pledge not to invade Cuba was dependent on UN supervision of the withdrawal of the missiles. Castro refused to allow UN inspections without comparable inspections of US territory, so formal agreement between Washington and Moscow was never reached (and there was no binding commitment on future US presidents). The CIA continued to plot the assassination of Fidel Castro. If Moscow's purpose was to ensure Cuba's security, the golden bridge was somewhat dilapidated. If it was a face-saving formula for Khrushchev, it served its immediate purpose. Nikita boasted to his comrades that they had secured a great victory. Whatever comes out of the Ukraine war, Putin will undoubtedly claim a great victory, though what will come out of the war is unclear. In this context, it might also be noted, that whatever Khrushchev's boasts of victory, the missile crisis loomed large in the charges against him when he was forced from office in 1964.

Dr Matthew Grant, University of Essex (History)

Nuclear policy is a uniquely challenging area. Practitioners are required to imagine the future in multiple forms, assessing varieties of risk, and doing so while understanding that at stake is the prospect of nuclear catastrophe. This task is made even more challenging by the contemporary context: the war in Ukraine is not just a geopolitical crisis but also the first significant nuclear crisis for nearly forty years. The storylistening approach has the promise to be a powerful tool to investigate the needs of practitioners, and to help meet them.

What comes through very clearly from the summary of gathered evidence are concerns about the ability to understand a series of complex questions in a rapidly changing and dangerous world. These anxieties can be separated out into two different, but interlinked, aims:

1) to think about the future; or rather, having the confidence that there is the capacity to think about the future in the best way possible.
2) to respond to an immediate crisis; or rather, having the confidence that the systems are in place in advance to deal with such a crisis.

It is note-worthy that in the evidence the current crisis and the future are often elided. This is a classic cognitive failing, but a very understandable one: an assumption that a current crisis will have a close link to future problems, and a desire to plan the future around an ability to meet a crisis which is already in the past. It speaks to the need practitioners have for better ways of understanding the world around them. Practitioners need to have the cognitive capacities to think about what they can and cannot know, and to have the space and time to do the future-thinking work that is necessary. I would put this in this way: there is a need to build capacity to ensure practitioners have the confidence they have the capacity to understand the world around them and face the future.

More specifically, there are four insights I would like to venture in response to the evidence which I hope will help suggest ways in which this broad aim is met.

First, practitioners should not overly worry about being ‘able better to anticipate the future actions of key individuals’. Of course this capacity is desirable, but is it possible? There is the potential for practitioners to be seduced by models and analogies that promise to help inform the present and anticipate the future. History shows us that individuals and nations act can act in a variety of ways which seem to contradict their own self-interest. Perhaps more importantly, a belief that these actions can be anticipated has led to major policy failures: most famously

in terms of 1930s appeasement and the approach to the Iraq war in this century. The Cold War generated an entire industry for interpreting Soviet actions, yet Moscow continually acted in ways which caught the West by surprise (and not only in an aggressive sense – there is an argument that western assumptions about Moscow meant that genuine attempts to build peace were missed). The point here is not that 'the future is unknowable, so why worry', but that that it cannot be anticipated. The history of the Cold War can also supply worthwhile models of how people *did* attempt to plan for uncertainty: for example, in thinking about escalation and miscalculation after the Cuban Missile Crisis; or the lengthy discussions about the 'nuclear threshold' in the early 1980s, a debate which speaks to exactly the concern one practitioner had about the potential use of such weapons by Russia. The key thing is to have the cognitive capacity to a) have an open mental horizon which keeps in view the multiple possible actions; and to b) have the flexibility to deal with these actions as they arise or are about to. Mechanisms to build such capacity should help address the potential for groupthink or the adopting of dominant narrative models. There is clear awareness of the need to do this, but I think it also pulls in a different direction to the desire for more evidence and scenario-planning. Little highlights the fixed worldviews of an organisation more than the planning scenarios they adopt.

Second, and linked, is the awareness of the importance of historical knowledge that comes through here. There is a thoughtful understanding that such knowledge is both useful and currently limited. It is worth stressing that possessing a limited range of historical parallels from which to draw on has the potential to entrench worldviews and limit the understanding of multiple perspectives on any issues. In this sense I was struck by the mention of the Cuban Missile Crisis in the evidence. This is a famous historical episode, and has been discussed at length – but it is surely of only limited usefulness as a narrative model. I would argue that the rather less exciting debates of the 1980s concerning cruise and tactical nuclear weapons, and the whole idea of limited nuclear war, would be of deeper relevance to today, in particular because it required policymakers to think of multiple narratives at once. There are wider points here about historical knowledge here, and practitioners are certainly not helped by a historicization of the Cold War which often stresses isolated flashpoints (like the Cuban Missile Crisis) or which treat the 'Cold War' as a historical uniform period, rather than a lengthy period of enormous and rapid change. There is also a natural tendency to privilege the Anglo-American experience. Instead, a historical mindset which emphasises the complexities of the Cold War examples would be more useful. This could stress that the narratives surrounding the earlier Cold War have been reframed by the experiences of the latter Cold War and that the experiences of nations such as France and West Germany would be useful to understand.

Third, I was deeply struck by the emphasis on public opinion, all the more so because of the relative absence of any discussion of technology, which I expected to be prominent. The history of British nuclear policy shows how difficult it has been for the public to *imagine* what the consequences for nuclear failure might be. How do people imagine a future that could be said to be unimaginable? That said, it is important to emphasise how firm support for Britain's nuclear deterrent has been, even at the highest points of the disarmament movement in the early 1960s and early 1980s. There is strong evidence that the public view British nuclear weapons in symbolic terms, as evidence of British power and prestige. One practitioner suggested possession of nuclear weapons might be the twenty-first equivalent of possessing an empire. This is an astute comparison, but one that can be said to have applied for more than fifty years. Such public feeling might run deep, but it relies on patriotic emotion (some might even say chauvinism) rather than an awareness of actual policy issues. I wonder how many people are even aware of the AUKUS pact? The deterrent might seem a rather expensive symbol if there is no accompanying knowledge of its actual role in aiding British security. That said, I suspect Putin's actions haves guaranteed public support for the deterrent for the next decade at least. Yet there are also wider issues here, and I noted one practitioner highlighting the key role nuclear power has in terms of building and sustaining talent and expertise in this area. This is a different issue, but I do think there is a lack of understanding of the role – or potential role – of nuclear energy within the field of British security that plagues both the government and the public. In this sense, I think the question of how nuclear policy can be linked to the government's other future-facing work is key. The questions of balancing expertise, the idea of risk, competing world views, and hard-edged political practicalities links questions of nuclear policy, climate change, and indeed pandemics. I would argue that just as the public have struggled to imagine the nuclear future they also struggle to fully comprehend the consequences of climate change.

Finally, I finish by returning to the issue of stories and narratives. It is important that not only are the stories of practitioners gathered and listened to by academics, but that they are listened to, and understood by the practitioners themselves. A powerful counterbalance to over-dominant narratives is to undertake the process of tuning one's ear to their existence. People need time and space to do this, combined with a historically-informed and open mindset which takes seriously the complexity of uncertainty. The potential rewards, not least in internal trust and knowledge, are great. In this spirit, I would have liked to have had more sense of the actual narrativity of the evidence being gathered from the practitioners: the summary circulated ironically serves to flatten out the 'stories'. What are the actual stories that are being listened

to and embedded? It is these stories, and the worldviews they illustrate, that need to be listened to, and listened back to by the practitioners themselves.

Note on further reading:

For an open access article on how the ability for people to understand the early Cold War was shaped by the experience of the later part of the conflict, see: M. Grant, 'Making Sense of Nuclear War: Narratives of Voluntary Civil Defence and the Memory of Britain's Cold War', *Social History* 44:2 (2019), 229-254.
https://doi.org/10.1080/03071022.2019.1579981

For a chapter on how difficult it was for individuals to comprehend the prospect of nuclear war, see: Matthew Grant, 'The Imaginative Landscape of Nuclear War in Britain, 1945-65', in M. Grant and B. Ziemann (eds), *Understanding the Imaginary War: Culture, Thought and Nuclear Conflict, 1945-90* (Manchester University Press, 2016).

For an insightful article on the nuclear crisis of the late 1970s and early 1980s, see: H. Nehring and B. Ziemann, 'Do all Paths Lead to Moscow? The NATO Dual-Track Decision and the Peace Movement – a Critique', *Cold War History* 12:1 (2012), 1-24.
https://doi.org/10.1080/14682745.2011.625160

For an open access reading on how people have used technology to understand the future, there is an interesting volume here: M. Cronqvist, R. Farbøl, and C. Sylvest (eds), *Cold War Civil Defence in Western Europe* (Palgrave Macmillan, 2002).
https://link.springer.com/book/10.1007/978-3-030-84281-9

Professor Paul Brians, formerly Washington State University (English)

My research four decades ago focused on fiction which depicted an actual nuclear war and/or its aftermath. But as far as I can tell your project focuses on the decision-making process which leads up to a possible war or prevents it.

I deliberately excluded books in which a nuclear war was avoided. I read several books about the aftermath of a worldwide catastrophe which many readers assumed must be a nuclear war, but for which there was no clear evidence in the text of the book itself. A good example would be Cormac McCarthy's *The Road.* It earned a lot of praise for its narrative style, but I found the plot drearily familiar from the dozens of other books I had read depicting journeys through a post-apocalyptic wasteland. These novelists rarely depict the politics leading up to the war. Most are accidents, acts of madness, or are simply unexplained. In other words, the very subjects you are interested in are ignored.

The focus of my research was to determine how people tend to imagine nuclear war, and the discouraging conclusion I drew is that writers either imagine it as a world-ending catastrophe—an apocalypse—or as a playground for anarchic adventures. As for readers—most seem to equate nuclear war with death: something horrific that we can do nothing to prevent, and that it is best not to think about. Precisely because they imagine it in absolutist terms, it is better to ignore it. The best-selling Cold War era-novels about it did not explore the subject realistically. Nevil Shute's 1957 *On the Beach* ignores the probable outcomes of a nuclear war to depict an implausible worldwide radiation death for all of humanity. Pat Frank's 1959 bestseller *Alas, Babylon* errs in the opposite direction, depicting a highly limited conflict with a happy ending. Readers found it horrifying nevertheless.

I found only three books which seriously explored the radiation damage caused by nuclear weapons: Masiji Ibuse's *Black Rain* [made into a film which was utterly overshadowed by the irrelevant Ridley Scott thriller with the same title] and Helen Clarkson's *The Last Day* [read by almost no one and almost impossible to find] and Whitley Strieber and James Kunetka's *Warday.* Here's an excerpt from my book on this subject:

When [Judith] Merril explored the consequences of radiation more thoroughly, in *Shadow on the Hearth* (1950), which is hardly a science fiction novel at all, she depicted a mild case. And Merril's treatment of the subject is one of the best. The protagonists of most nuclear war science fiction are spared the horrors of radiation disease entirely. It is almost entirely outside

of science fiction–in the novels depicting the victims of the Hiroshima bomb–that detailed descriptions of the course of radiation disease are presented from the point of view of the sufferer. Given the claims of science fiction to scientific accuracy, the avoidance of this topic is remarkable. One would not expect the theme to appear in science fiction adventure stories, for there is nothing heroic about wasting away in agony, but radiation disease is absent even from most of the more thoughtful nuclear war science fiction. Indeed, cancer, blindness, even loss of hair and skin lesions–all of these ordinary consequences of exposure to high levels of radioactivity are extraordinarily rare in fiction. Radiation is often mentioned as a threat, but one which is successfully avoided by the principal characters.

Brian Aldiss' *Heliconia Winter* does not specifically refer to nuclear war, but clearly is influenced by nuclear winter theory. Other novels depicting nuclear winter have appeared more recently. Though I have not read them, they would seem to be mostly escapist post-apocalyptic fantasies.

A recent study argues that even a relatively small exchange between India and Pakistan would result in a sort of nuclear autumn, which would bring about a worldwide famine: [https://news.climate.columbia.edu/2020/03/16/even-limited-india-pakistan-nuclear-war-would-bring-global-famine].

Despite the prominence of winter weather in current discussions of the Russian invasion of Ukraine, no one seems to consider the possibility that if Putin carried out his threats to use a number of nuclear weapons there he might trigger such a worldwide catastrophe.

Policymakers seem to routinely ignore nuclear winter theory generally. It seems to me that for most people's imaginations—including those of authorities who might begin such a war—the consequences of a real nuclear war don't bear thinking about.

I would urge your participants to read the short chapter "Avoiding Nuclear War" from my book, available online at https://brians.wsu.edu/2016/11/16/chapter-five/.
I encourage anyone interested in the subject to explore my annotated bibliography at https://brians.wsu.edu/2017/02/27/nuclear-holocausts-bibliography/.

Postscript:

In discussing nuclear winter, I should have mentioned when I was invited to the Seventh World Congress of International Physicians for the Prevention of Nuclear War in Moscow in 1987. I was asked to speak on the same panel with the creators of the film *Letters from a*

Dead Man which depicts a nuclear holocaust triggering a global nuclear winter in a very moving way. Westerners assumed that Russian writers were not allowed to depict nuclear war as a possibility. But in the Gorbachev era this film was shown widely all over the Soviet Union to huge audiences while remaining quite unknown to people in the west. I wonder whether Putin saw it.

I should have also mentioned that Russian writer Vladimir Gakov was the person who got me invited to the event in Moscow. Trained in nuclear physics, he became a journalist and literary critic focussing on science fiction. When he explained to me that during the Gorbachev years the unspoken taboo on depicting nuclear war in a realistic fashion had been overcome, we collaborated on an annotated bibliography of such work ("Nuclear-War Themes in Soviet Science Fiction: An Annotated Bibliography." *Science-Fiction Studies* 16 (1989): 67-84).

Dr Spencer R. Weart, former director of the Center for History of Physics of the American Institute of Physics (Physics, History of Science)

Everyone knows the story of nuclear war. Depending on who tells the story there can be various subplots and lessons, but nearly every aspect fits neatly into one main plot. We can name it “Apocalypse.” I described the evolution of the nuclear story at length in my 1988 book, The following summarizes some findings particularly relevant to your inquiry.

The discovery of “atomic energy” around 1900 was immediately popularized by journalists, fiction writers and scientists themselves, all elaborating a tale of fantastic and mysterious cosmic forces. The fact that the energy stemmed from the transmutation of elements led immediately to invocations of alchemy. But alchemy called up a vast and ancient complex of images revolving around the concept of apocalypse. Apocalypse meant the transmutation of all things: not only the end of the physical world but also social degeneration and collapse, and more intimately, the dark night of the soul. For each of these, there was a hope that the fall might lead to rebirth—a new creation, a golden age, a purified soul—but also a threat of getting stuck at the bottom of the cycle in eternal darkness. Thus excited talk about atomic transmutation called up profound mythical and psychological forces.

Both fictional and nominally factual accounts of atomic energy invoked an image of scientists and others who might now begin to wield unfathomable forces. It was another complex of symbolism with deep historical and psychological roots: a dangerous parental/authority figure that evolved historically from shamans and witches through Faustian sorcerers to mad scientists with death rays. It didn’t help that atomic energy was in fact manifested in radiation, which had its own ancient symbolism in the mystic life-force of sunlight, the fatal Evil Eye, etc.

By the 1930s nearly everyone in the world with access to magazines, movies or radio associated atomic energy with a wide variety of potent images. Writers evoked profound emotional and sexual issues. Among these were the literal end of the world (perhaps the entire planet exploding in a chain reaction), civilization reduced to rubble following a war with atomic bombs (as in a 1914 novel by H.G Wells and a derivative 1938 movie), and aggressive male scientists with magical ray devices (as in a 1936 movie where Boris Karloff seeks to irradiate young women, a deliberate sexual metaphor, and kills people with his radioactive touch). There is not space here to sort out the many additional resonances. Overall, by 1940 the tangle of ideas and imagery surrounding atomic energy had a complexity, richness and

emotional depth like nothing in modern culture outside the complex of symbolism surrounding Christianity.

In 1945, things most people had thought of as fantasies for adolescents turned out to be technological reality. Soon schoolchildren learned that those who were supposed to protect them could not prevent their homes from being horribly annihilated at any moment—inciting, social observers later suggested, the distrust of authorities so prominent in the postwar generation. In popular horror movies, the Frankenstein's monster became altogether non-human and uncanny (as in a much-imitated 1954 movie that featured gigantic ants engendered by bomb radiation). Radioactivity could in fact produce mutants, that is, birth defects. The mutant child is another deeply emotional image, historically connected with magical forces and sexual pollution.

Anti-war protesters took this up, pointing out that fallout from bomb tests was sneaking even into mothers' milk. Atomic energy, or "nuclear energy" as it began to be called, and in particular radioactivity, was polluting, disgusting, and horrid. Meanwhile the advent of intercontinental missiles bearing hydrogen bombs convinced most people that another world war could destroy civilization, if not humanity itself—actual apocalypse. Distrust of the authorities who were polluting and endangering everyone erupted in protests that engaged hundreds of millions of people. There was much more involved, and I only have space here to note two subplots of special interest.

First, the "accident/escalation" story. What would bring on apocalypse? The traditional apocalypse usually resulted from the accumulation of human sin, a social process. Now it might be caused by one wicked individual, as in a 1938 novel about a mad atomic scientist who planned a chain reaction that would vaporize the planet. More often the disaster was seen as an accident, as when Los Alamos scientists pursued calculations to reassure themselves that their first test would not set fire to the atmosphere. In the postwar period many thought the end of the world was likely to start with a minor event that set off a social chain reaction as each side raised the stakes step by step—the much-discussed escalation. In the 1959 movie *On the Beach* the trigger was not even known, perhaps an electronic glitch. Many invoked the August 1914 catastrophe as a warning. The accident/escalation apocalypse subplot was reinforced decades later as accounts emerged, only somewhat exaggerated, of how a particular Russian officer during the Cuban Missile Crisis, and another in the early 1980s, had been on the point of initiating a nuclear exchange but luckily had refrained.

A related subplot is the "taboo" story. The phrase "nuclear taboo" appeared in books in the 1960s and became more common quite steadily down to the present. People declared that a nuclear war would be too horrible for any sane person to intentionally start one; therefore nobody would start one. Some invoked as evidence a supposed taboo against poison gas created by the horrors of the First World War. False: poison gas was used by Italy in Ethiopia in 1935-36 and in the Syrian civil war in 2018 without serious pushback. In a version of the story that is superficially more plausible, many people believe that if the President of the United States or the President of Russia ordered the launch of a nuclear weapon, he would not be obeyed. Also almost certainly false: both nations, fearing that their opponent might find a way to interrupt a command to launch, have worked to make the command irresistible. In any case, there is no guarantee that the leader of a nation with nuclear weapons will be sane. The taboo subplot is thus in conflict with the subplot of the mad scientist, to whom we will return later in his incarnation as fanatic. Nevertheless, as the very word "taboo" indicates, nuclear weapons are associated (far more than poison gas) with horrid polluting dreadful magical force, thus bringing something more than rational pressure to bear against initiating a war.

The nuclear apocalypse story with its subplots has had real-world effects. Much engineering effort has gone into avoiding a failure in microchips or communications that could trigger accidental escalation. And during the Cuban Missile Crisis, the national leaders were acutely aware that their populations were dangerously terrified, while Kennedy and Khrushchev themselves both saw a nuclear exchange as in effect taboo. Khrushchev explicitly invoked escalation ("the more the two of us pull," he told Kennedy, "the tighter that knot will be tied") and Kennedy had recently read a popular history of the August 1914 crisis. Historians believe that the weight of these stories helped bring the crisis to its peaceful resolution.

Kennedy and Khrushchev eased tensions by banning bomb testing above ground. Reassured by the détente, and no longer able to mobilize fear of fallout pollution, the anti-bomb movement collapsed. After 1965 production of nuclear war books, movies, TV shows, etc. abruptly halted; public opinion polls no longer found war a salient issue. Since the weapons continued to proliferate, this looks like a clear case of the psychology of denial: "I can't do anything about it, it's too awful to think about—so I won't think about it."

The only other period when nuclear war was widely feared was in the early 1980s, when a corrupt and slipshod Soviet apparatus ruled by a senile drug addict (Brezhnev) took too seriously the belligerent pronouncements of a careless US president (Reagan) and his associates. Talk of apocalypse revived. Among other feats of story-telling, the 1983 television

movie *The Day After*—the first and only widely seen realistic depiction of the aftermath of a nuclear exchange—deeply disturbed those who saw it, including a majority of American adults and Reagan himself. National leaders, whether from personal anxiety or in reaction to massive anti-war demonstrations, lowered tensions. The media and public quickly reverted to silence, i.e., denial.

What is the nuclear story today? The generations who came of age after 1983 never knew the crushing visceral anxieties of their parents. To be sure, everyone has been exposed to the story (e.g., in the Terminator movies), but as a second-hand experience with superficial impact. Apocalypse, for the new generations, is a science-fiction trope in the post-modern universe of referencing, distancing and irony. The radioactive mutant monster is something your parents were afraid of, a clever construct you can shoot at in a video game like the immensely popular Fallout series.

Meanwhile another subplot became common, the "nuclear terrorist." He could be seen embryonically in early pulp-fiction stories of deranged atomic scientists and evil leaders with magic-science devices like Ming the Merciless in Flash Gordon. After 1945 the theme extended into more plausible stories, notably spy tales and the James Bond movies. The 9/11/2001 attacks instantly evoked thoughts of a similar attack with a nuclear bomb. As rogue tyrants like Saddam Hussein and the rulers of Iran and North Korea were denounced as sponsors of terrorism, the mad-scientist/terrorist/evil-dictator subplot came to dominate nuclear anxieties. Contemporary story-tellers have almost entirely ignored full-scale nuclear war. Even news articles about the Ukraine war offer only banal references to escalation, without describing the thing that must not be allowed to happen. The persistent denial suggests that the accident/escalation and taboo themes may be exerting more strength than ever against actual use of nuclear weapons.

And now for something completely different. Having spent most of the past quarter-century studying the other existential risk to civilization, I must say a few words about the "climate change" story. It has no plot. In contrast to the vast tangle of powerful symbols and psychological associations clustered around nuclear war, we find... polar bears? To be sure, there is an increasing number of images of drought-stricken landscapes, vast wildfires, and miserable refugees, but these images are mainly associated with the routine disasters of the past. The only influential productions have been dry factual articles and documentaries, complete with charts and graphs. Niche literatures—science fiction, young-adult chapter books, literary novels—have addressed the problem inconsistently; movies and television

have produced no useful stories at all. Outright denial is widespread. Yet the risk is greater than from nuclear war. Perusing the fine print in authoritative reports reveals that, under the policies nations are currently pledged to follow, scientists calculate an approximately 5% chance of global heating to a point where it is doubtful we could sustain an even partly prosperous and liberal civilization, or perhaps any civilization at all. As an eminent climate scientist remarked, “You wouldn’t get on an airplane that had a 5% chance of crashing.” The nuclear war story has helped the world avoid, so far, one existential threat. We have yet to find a comparably effective story for climate change.

Dr Suzanne Doyle, University of East Anglia (International Relations)

When reading the interview material, one response struck me: "In twenty years, no one has ever said to me the phrase 'where's the evidence for that?'" The respondent in-turn raised the problems of a lack of institutional memory and learning from experience and history. This quote also spotlights the conundrum faced by practitioners and academics working in the nuclear field: the limited evidence-base for decisions. After eight decades of living with nuclear weapons, a period which has seen crises but no deployed nuclear weapon use since August 1945, nuclear analysts have scant facts for their analysis. As the interviewees identified, this has led to the Cuban missile crisis becoming "a pre-eminent source of narrative with respect to nuclear policy." Similarly, academics have intensively studied the Cuban missile crisis. Yet even after Eliot Cohen's published article in 1986 on 'Why We Should Stop Studying the Cuban Missile Crisis', access to Soviet archival material alongside new interpretations has led to continued debate on the lessons of the crisis.[14] Likewise, the recent renaissance in nuclear history has revealed that many of the historical and theoretical questions surrounding nuclear dynamics are not as settled as we once thought they were, and has challenged long-held beliefs about nuclear decision-making.[15] This limited evidence-base is of course something to be very grateful for, but it is important to be cognisant of the increased influence of worldviews and theoretical assumptions this creates within decision-making.

To fill the gaps of knowledge we use oft-hidden assumptions, mental models, and ideologies that in-turn create our vision of what we see as the nuclear future. The nuclear culture in which we exist heavily influences these assumptions. For example, whilst as the interviewees highlighted, the use of games and interactive simulation can be "one way of creating 'evidence'" and a means to try to overcome the "challenges of conceptualising multiple potential futures", within these activities the assumptions of participants help determine the outcomes. This is inevitable. Therefore visionary and effective decision-making relies on the input of different viewpoints and ideas, where varied voices are heard and feel empowered to speak freely. Research suggests that this has not occurred in the nuclear field as much as it needs to.

---

[14] Eliot Cohen, 'Why We Should Stop Studying the Cuban Missile Crisis', *The National Interest*, Winter 1985/1986, 3–13; Len Scott, 'Should We Stop Studying the Cuban Missile Crisis?', *International Relations*, 26(3) (2012), 255–266, https://doi-org.uea.idm.oclc.org/10.1177/0047117812451837; L. Scott & R.G. Hughes, ed., *The Cuban Missile Crisis: A Critical Reappraisal*. Routledge, 2015.

[15] Francis Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age*. Cornell University Press, 2012; Scott Sagan 'Two renaissances in Nuclear Security Studies", H-Diplo/ISSF Forum on 'What We Talk About When We Talk About Nuclear Weapons.' June 2014. https://issforum.org/ISSF/PDF/ISSF-Forum-2.pdf.

Nuclear decision-making by its nature is quite closed. For example, a handful of ministers and senior civil servants were involved in the original Trident procurement decisions.[16] On top of this there is the interesting dynamic in nuclear warfare decision-making, as one interviewee raised, "that it was typical not to know what others in your own government, with whom you were working, knew or didn't know, as they might not be able to tell you." Whilst these levels of secrecy are necessary due to national security, it clearly limits open and transparent decision-making, and it is important to critically engage and reflect on the potential impact of this.

As the small numbers involved in decision-making is unlikely to change, it is paramount that participants come from a variety of backgrounds and feel enabled to propose uncomfortable questions and alternative solutions. As one interviewee raised there is the risk of "'groupthink'… [and] Chairs should encourage uncomfortable questions and views." Yet there are, quite clearly visible, limitations in the diversity of nuclear practitioners. Moreover, as the interviewees highlighted, there exists within the field of nuclear defence practices that function as barriers to new and alternative thinking.

Research on nuclear weapons scholarship and the United States nuclear policy community has found the pervasive tendency of self-censorship, whereby participants moderate their behaviour to fit into conventional modes of thinking or face reduced influence.[17] The interviewees do suggest that to a certain extent this problematic dynamic of self-censorship exists within UK policymaking. Interviewees identified, "the difficulty of testing or even noticing assumptions held by senior decision-makers, or by influential groups." Whilst one interviewee commented, "on the pervasiveness of mantras and truisms: assumptions that can become policy without being questioned. It can be problematic when mantras become so ingrained that to suggest other policy options may destroy one's influence."

[16] Suzanne Doyle, 'A Foregone Conclusion? The United States, Britain and the Trident D5 Agreement', *Journal of Strategic Studies*, 40:6 (2017), 867-894, DOI: 10.1080/01402390.2016.1220366

[17] Benoît Pelopidas, 'Nuclear Weapons Scholarship as a Case of Self-Censorship in Security Studies', *Journal of Global Security Studies*, 1:4 (2016), 326–336, https://doi.org/10.1093/jogss/ogw017; K. Egeland & B. Pelopidas 'No such thing as a free donation? Research funding and conflicts of interest in nuclear weapons policy analysis.' *International Relations* (2022). https://doi.org/10.1177/00471178221140000; H. Hurlburt, E, Weingarten, A. Stark & E. Souris, 'The "Consensual Straitjacket": Four Decades of Women in Nuclear Security,' New America (2019). https://www.newamerica.org/political-reform/reports/the-consensual-straitjacket-four-decades-of-women-in-nuclear-security/part-1-women-in-nuclear-security.

The hierarchical structures within nuclear defence communities reinforce this self-censorship. For example, in research that interviewed senior females working in US nuclear policy, participants viewed the arms control/nonproliferation community as more welcoming to diverse perspectives and innovative ideas than the nuclear deterrence/posture community which was described as more closed-off and hierarchical. At the top of this hierarchy participants identified the 'nuclear priesthood' who viewed deep experience in the field and command of the highly technical jargon as important qualities for inclusion in the community.[18] Such insulated, hierarchical structures lend themselves to closed mindedness and groupthink that in turn limits policy outcomes.

As far as the author knows, similar research has not been conducted within the UK nuclear space. It would be interesting to understand the extent to which similar patterns of hierarchy exist in the UK decision-making context, particularly given the staff fluctuation patterns that are identified in the interviews where policy makers often move in and out of work on nuclear issues, as well as the different hiring practices between the US and UK. Notwithstanding there are important questions here, such as whether high turnover encourages innovative ideas, or does it lead to the further embedding of nuclear orthodoxy?

The available evidence does suggest that the Anglo nuclear community must acknowledge the threat of the consensual straitjacket; whereby there is a real risk of the suppression of outside-the-box ideas through various dynamics, and decision-making is therefore more likely to follow an almost pre-determined script. We should not underestimate the importance of grappling with this issue. As the interviews highlight, the world faces myriad nuclear risks, and concurrently how to make effective decisions about our nuclear future is a dominant concern of the interviewees. Yet, as I have discussed, visions of the future are strongly determined by our framing, mental models, and assumptions. These predictions of the future in turn shape our contemporary decisions, with the danger that these create self-fulfilling prophecies. Therefore, leaders must engage in critical reflection on whether contemporary practices and dynamics in the nuclear field leave us well-equipped to create an environment that empowers innovative and diverse thinking. The response to these challenges will determine how the field improves and innovates or fails to do so.

[18] H. Hurlburt et al., 'The "Consensual Straitjacket"'.

Appendix A: Stimulus Paper Guidance for Authors

Aim: The aim of the stimulus papers is to create common ground for the workshop so that everybody has a shared basis of knowledge, and a sense of common questions that will be addressed. The papers should provide an academic perspective on issues faced by policy practitioners, drawing upon research and evidence from the humanities and social science, particularly the role of narratives (broadly defined).

Style: The stimulus papers must be clear to a lay person. They should be informed by academic insight and expertise, but written in an accessible manner distinct from the kind of paper that would be sent for specialist peer review. The paper can include further reading notes, but must be intelligible independently.

Content: The content of the stimulus papers will respond to the Practitioner Interview Summary in light of storylistening, considering how narrative evidence can be applied to the issues raised. Storylistening outlines four key cognitive and collective functions of stories: providing different points of view; forming collective identities; providing narrative models to enable reasoning; and, informing anticipations of the future.

The content of the paper will also be determined by discipline and expertise. You could consider the historical dimension in relation to the points raised by the interviews. For example, how can evidence from historical narratives about Russian-US relations, nuclear proliferation, or any other relevant area, be brought to bear on these interview responses? Alternatively, the paper could take a literary direction, considering speculative or nuclear narratives, or adopt a political angle, discussing the role of government and military material in public debate and decision-making.

More broadly, you could address issues raised by the interviews such as worldviews, the role of public opinion, the intersection of crises, and truisms/groupthink. You may discuss which stories were (or are) treated as legitimate sources of knowledge, or as providing valid points of view, and consider how this treatment informed (or informs) decision-making and outcomes. You could explore which types of stories relevant to policy-making were (or are) popular within influential collective groups, such as government, military, scientists, businesses, think tanks, academia and mass audiences.

Examples of stimulus papers: This link leads to a page with examples of longer stimulus papers in the PDF documents on the right hand side, from Sarah Dillon's 'The Function of Stories' to Tim Radford's 'Of Word and Image'.